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ABSTRACT

Projected declines through the 1980s in Australian elementary and secondary school enrollment imply a number of changes in school finance and educational facilities and personnel, according to this report. Elementary enrollments will decline sharply until 1987 and then rise, while secondary enrollments will rise slowly until the mid-1980s before falling after 1986. This pattern will vary, however, across states and urban areas. The authors review the effects of declining enrollment on teacher employment and student-teacher ratios. They then discuss reductions in educational expenditures and their effects on school size, structure, and staffing and on teacher salaries and promotion. Two further chapters examine options for the use of school facilities during enrollment declines, including the "de-zoning" of secondary schools, closures, amalgamations, cooperating schools, specialist schools, and multi-campus schools. Another chapter on educational personnel considers the problem of deteriorating promotion opportunities and suggest early retirement, service or study leaves, part-time employment, and other means of maintaining turnover. Twenty-one recommendations are presented for dealing with enrollment decline, covering educational organization, facilities, and personnel. Two appendices analyze the size of Australian schools and review three case studies of enrollment decline in Victoria's secondary schools. (Author/RW)

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Australian Education Council

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Report to the Australian Education Council
prepared by the Centre of Policy Studies
Monash University

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Each quadrant of the AEC symbol depicts the silhouette of the capital letter E for Education. It symbolises the inter-governmental nature of the organisation and the eight Ministers who together constitute its membership and who are represented on the Council's working parties and task forces.

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A Report by the Centre of Policy Studies,
Monash University

*The Changing Patterns of School Enrolment and Their Implications for
Educational Policy and Management*

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PREFACE

The decision to commission a study of changing patterns of school enrolment was taken by the Australian Education Council at its meeting in October 1979 in Perth. The AEC determined that the Education Authorities of the States and Territories should provide, to a common format, data and statements pertaining to changing enrolments and related trends and to the current and anticipated effects of these on the education system (referred to as AEC Statements 1980). It also determined to advertise for independent consultants to submit brief proposals for a study of changing school enrolments. From these submissions a Steering Committee appointed by the AEC invited particular groups to propose comprehensive proposals. As a result of this process the proposal from the Centre of Policy Studies was accepted and the final Research Brief with a budget of \$27,000 was offered to, and accepted by Professor Michael Porter, Director, Centre of Policy Studies, Monash University on 12th August 1980 for a study with Dr. Gerald Burke of the Faculty of Education, Monash University and Mr. Hugh Hudson, Visiting Fellow, Centre of Policy Studies, as principal researchers, assisted by Mr. Kevin Gould. The Study was to be submitted in final draft four months later and copies of the final report delivered by 9th January 1981. The Research Brief is included as Appendix C.

During the progress of the study draft materials were submitted to the Steering Committee including a draft of the report in November. A seminar on work-in-progress was held in October in Adelaide attended primarily by the contact persons nominated by Education Authorities.

The study was undertaken in the required four months, part of which was spent in seeking data additional to that prepared by Education Authorities (AEC Statements 1980). While such a time period may be sufficient for an overview of a problem, detailed research studies require rather more time. The report covers a wide range of issues associated with changing enrolments but does not claim to be comprehensive. Responsibility for the Report rests with the Centre of Policy Studies. While the design and content of the Report is a team effort Chapters 1 and 2 were written by Gerald Burke and Chapters 3 to 6 and Appendix A by Hugh Hudson. Appendix B was written by Kevin Gould.

INTRODUCTION

The decline in births from 1971 is the major factor in the projected sharp decline in primary enrolments in Australian schools in the next few years. However, secondary enrolments are expected to rise until the mid-eighties and primary enrolments are expected to rise again in the late eighties. The pattern of increase or decline in enrolment will vary markedly across urban areas and between states given the changing structure of the Australian economy. This study identifies the possible changes that might occur, the problems associated with change and policy and management options.

The report considers the dimensions of change in enrolments in the eighties in Chapter 1. The possible size of changes at primary and secondary level and by state and system is analysed, together with the increasing degree of likely error in projections of enrolments by the end of the decade. It is demonstrated that the increase in the labour force relative to school enrolment in the 1980s implies that a considerable increase in expenditure per pupil could be accommodated with the same proportion of the GDP devoted to education as at present. Stated another way, some reductions in total expenditure on schools as a percentage of GDP could be achieved while still allowing reduction in pupil/teacher ratios and some increased expenditure per child. The somewhat gloomy cost and personnel problems considered in later chapters must be seen in this more favourable context.

Chapter 2 reviews some of the implications of changing enrolments for teachers. The major factors affecting the size and age-structure of the teacher work-force in the seventies have been changes in pupil-teacher ratios (PTR's) and wastage rates: changes in enrolments have been of relatively minor importance. There is considerable apparent variation between States in staffing ratios and uncertainty about future ratios. Wastage rates have fallen sharply since the mid-seventies as a result of the oversupply of teachers, which has been accentuated by conditions of general unemployment. A relatively small rise in future wastage rates or reduction in pupil/teacher ratios can have a large impact on recruitment, on teacher education institutions, on age structures and on promotion prospects. Past experience

suggests that a sharp rise in resignations could be quite likely if the economic situation improves. From an educational and industrial viewpoint the opportunities coming out of potential economic growth and a temporary decline in enrolments are likely to be seen as desirable.

While a decline in numbers in the short-term offer some new opportunities, other claims on national resources suggest that financial stringency may be imposed, perhaps to the extent of substantially reducing the proportion of GDP devoted to education. In this context Chapter 3 reviews the options which need to be considered to maintain educational quality. Possible changes in school size and structuring are considered, along with the associated impact on costs. On current staffing formula it seems that cost increases up to 5 per cent could occur in the eighties because of declining size of schools. And as outlined in a case study in Appendix B problems in maintaining the range of subject offerings could occur. At the same time substantial incremental creep in salaries has already occurred, and promotion prospects for teachers have declined with implications for morale.

A range of policy options is considered in Chapters 4 and 5 directed particularly at the structure of schools. Dezoning is an option which seems particularly appropriate. Other options include closures, amalgamation, secondary colleges, co-operating schools, specialist schools and multi-campus schools.

Almost all suggestions for the structure of schools have implications for personnel, for which the particular problems of slow promotion and incremental creep are evident. Indeed, many of the policies for structure may be resisted unless ways of sustaining promotion prospects can be developed. Chapter 6 reviews the possibilities for increasing recruitment and particularly promotion associated with early retirement, long service leave, leave without pay, secondments, inter-system mobility, part-time employment, study leave and contract teaching.

In the time and with data available it has not been possible to consider the problems of ancillary staff though it seems that many of the policy options considered for teachers would be relevant.

One feature of changing enrolments is the sharp increase in the actual and forecast proportion of enrolments in non-government schools in a situation of overall stagnation or decline. The research team has not had the time or data to analyse these issues, which deserve a separate study of their own. While some recommendations of the Report should affect the competitive position of schools (e.g. dezoning) we regret that the issue of government/non-government school mix has, owing to a shortage of time and information been left for subsequent analysis.

1.1 Introduction

Enrolments in primary schools across Australia are projected to fall about 10 per cent in the next six years and then begin to recover sharply through the end of the decade. Secondary enrolments are projected to rise about 8 per cent in the next few years, but then to decline sharply with recovery beginning by the mid-nineties.

This chapter reviews

- (a) the dimensions of the projected changes in enrolments for Australia as a whole, with particular attention to interstate differences;
- (b) the projection methods used and the past experience of projection error;
- (c) the effects of plausible changes in fertility, migration, and retention of secondary students on projection errors in the 1980s;
- (d) implications of projected changes for expenditure, and of uncertainty of projections for flexibility in policy.

1.2 Dimensions of Change

Total enrolments in primary and secondary schools in Australia are projected to decline by less than 5 per cent over the eighties and to begin to grow again by the nineties. The projected changes largely reflect changes in births and hence the changes occur at different times at primary and secondary levels. As shown in Table 1.1 primary enrolments, which grew less than 5 per cent in the seventies, are expected to decline by about 10 per cent from the 1979 total by 1987. They are projected to recover sharply into the 1990s. Secondary enrolments grew rapidly until the mid seventies. They declined very slightly in the late seventies mainly because of a low level of births in the mid-sixties. The high level of births in the years 1968 to 1972 is the reason for the projected marked *increase* in secondary enrolments between 1981 and 1985. The effects of the decline in births from 1972 will become evident in secondary enrolments in the late eighties.

Table 1.1
Index of Actual and Projected Enrolments in Government
and Non-Government Schools
Australia 1970 to 1990
[1979 = 100]

	Primary 1,885,000 = 100.0	Secondary 1,102,000 = 100	Total 2,987,000 = 100
1979			
1970 Actual	96.1	86.8	92.7
1975 Actual	96.5	99.8	97.7
1980 Actual	99.9	99.8	99.9
1981	99.0	100.0	99.4
1982	97.5	101.4	99.0
1983	95.3	104.0	98.1
1984	92.9	106.7	98.0
1985	91.2	107.5	97.2
1986	90.3	107.6	96.5
1987	90.1	105.4	95.8
1988	91.0	102.9	95.4
1989	92.6	100.1	95.4
1990	94.7	98.0	95.9

Source: Commonwealth Department of Education Statistics Unit, Projected Enrolments in Australia Schools, March 1980, and ABS Schools, Australia, 1979, Cat. No.4202.0, School Enrolments, 1980, Cat. No.4201.0.

Notes: Exclusion of some pre-school enrolments reduces the primary index by up to 1 per cent for 1979 and later years compared to earlier years.

There is a marked difference in the State by State picture, as shown in Table 1.2. Western Australia and the two Territories are expected to have higher enrolments in 1990 than in 1979 in both primary and secondary areas. Queensland, and N.S.W. in the latest projections, are seen to have total enrolments in 1990 close to the 1979 level. It is clear that the problem of declining enrolments is not common to all States. Victoria, Tasmania and South Australia are on current projections likely to have total school enrolments in 1990 some 8 to 12 per cent lower than in 1979. However, in the period to 1990 each State is projected to experience a contraction and an

Table 1.2

Actual and Projected Enrolments in Primary and Secondary Schools
(Government and Non-Government) 1975-1990

000s at August

P = Primary S = Secondary T = Total

		1975 Actual			1980 Actual			1985			1990		
		P	S	T	P	S	T	P	S	T	P	S	T
N.S.W.	State Comm.	617	390	1,007	649	381	1,030	600	414	1,014	619	382	1,001
								600	420	1,020	620	392	1,012
Vic.	State Comm.	484	329	817	491	330	822	433 ^b	344	777	437 ^a	314 ^a	751 ^a
								428	349	777	449	308	757
Qld.	State Comm.	227	141	419	303	147	451	282	169	451	291	159	450
								285	167	451	288	155	443
S.A.	State Comm.	174	100	274	168	93	260	147	94	241	151	82	233
								146	92	238	153	79	232
W.A.	State Comm.	157	81	238	168	85	253	160	95	255	172	89	261
								158	93	251	169	86	255
Tas.	State Comm.	52	36	88	53	34	87	47	36	83	47	32	79
								46	35	81	48	31	79
N.T.	Terr. Comm.	15	4	19	20	6	26	30	7	37	36	9	45
								21	7	28	21	8	29
A.C.T.	Terr. Comm.	29	18	47	34	21	56	n.a.	n.a.		n.a.	n.a.	
								36	24	60	36	24	59

Sources: AEC, Statements by State and Territory Education Authorities Regarding Changing Enrolments and their Effects, 1980.
 Projected Enrolments in Australian Schools 1980-1990, Commonwealth Department of Education, March 1980.
 ABS Schools, Cat. No. 4202.0, School Enrolments 1980, Preliminary, Cat. No. 4201.0.

Notes: (a) 1989 projection and excludes enrolments in special schools
 (b) Excludes enrolments in special schools
 (c) NSW., Vic., Tas., ACT secondary grades are years 7-12; Qld., SA, WA, NT secondary grades are years 8-12

State or Terr. means projection by State or Territory Authority.
 Comm. means projection by Commonwealth.

expansion of primary enrolments, and an expansion followed by a contraction of secondary enrolments.

Within each state and territory expansion and contraction could vary markedly by geographic regions. For example, while marked urban-rural trends were not reported, there were sizeable shifts in enrolments particularly in urban areas in the period 1975 to 1979. Several of the inner areas of Perth experienced declining primary and secondary enrolments, whereas suburban cities and shires grew rapidly. In Melbourne, primary enrolments in outer areas such as Melton, Sherbrooke, Healesville, and Upper Yarra are expected to increase up to 40 per cent (Melton) between 1980 and 1984. Primary enrolments in Central/Prahran Region (about 12 inner suburbs) are projected to decline about 30 per cent overall, compared with a statewide decline of about 14 per cent in primary enrolments in government schools to 1984. Major new resource projects, such as the North West Shelf venture in W.A., the Gladstone project in Queensland, the Hunter Valley smelters in N.S.W. and the aluminium based activities in Portland, all offer sources of new growth in demand for educational facilities.

Expansion and contraction of enrolments are projected by the State Education Departments to be felt disproportionately by the government sector. Table 1.2a shows that during the period of decline in primary enrolments to 1985 a rise is projected in the proportion of enrolments in the non-government sector. With a projected recovery of primary enrolments in the late eighties the non-government proportion is projected to fall or remain constant. The proportion of secondary enrolments in non-government schools is forecast to rise in the late eighties when overall secondary enrolments decline.

Statistical relationships between government and non-government school enrolments have been analysed in some detail in a report by a study group of the Commonwealth Department of Education and the Schools Commission (Australia, Relationships Between Government and Non-Government School Enrolments, 1980). It shows that the non-government share of total enrolments across Australia had fallen over a prolonged period until 1977, e.g. from 23.8 per cent in 1965, to 21.9 per cent in 1970, and to 21.1 per cent in 1977.

Table 1.2a
Percentage of School Enrolments in Non-Government Schools,
1975 - 1990

Actual and Projected

	1975 [Actual]		1980 [Actual]		1985		1990	
	P	S	P	S	P	S	P	S
N.S.W.	20.6	23.5	20.5	25.5	21.8	24.2	21.3	25.7
VIC. ^b	22.5	27.0	23.8	29.9	26.1	31.4	25.9a	34.1a
QLD.	19.4	26.5	18.3	28.2	19.3	25.6	18.9	28.8
S.A.	12.7	16.9	14.1	18.9	14.7	18.8	14.7	21.2
W.A.	15.8	22.8	15.5	24.2	15.5	22.6	15.3	23.8
TAS.	14.4	17.5	15.5	18.9	16.6	20.7	16.7	21.7
N.T.	15.0	11.1	15.8	14.7	13.2	16.4	12.7	17.4
A.C.T.	23.8	28.8	27.5	32.5	n.a.		n.a.	

Source: AEC, Statements, 1980, Schools Commission Statistical Bulletin, December 1980

Notes: a 1989

b Victorian enrolments exclude enrolments in special schools in 1985 and 1989.

n.a. not available

P Primary, S Secondary

It has risen from 1978, to 22.3 per cent in 1980. From 1977 inclusive the non-government proportion of students beginning primary school has risen. In the last few years net transfers from government to non-government schools have increased in the compulsory school years, and enrolments in senior secondary years have increased relatively in non-government schools. Overall Victoria shows the swing to non-government schools most, with the proportion of enrolments rising from 24.3 per cent in 1975 to 26.3 per cent in 1980.

The basis for these State projections has not been reviewed in the study, owing to limitations of time and resources. Reasons for the recent switch to non-government schools have therefore been left for subsequent analysis.

1.3 Projection Methods and Projection Errors

Two principal methods of projecting enrolments are used in Australia: the age-participation¹ and the year-progression² method. The former has the virtue of explicitly stating the migration and fertility assumptions underlying the projection.³ The latter has the virtue of not requiring projections for the population by age as the "projections are based primarily on students already enrolled, especially for the beginning of the projection period" (U.S.A., 1978, p.7).

In both methods the discrepancy between projected and actual outcomes will depend on the accuracy of key assumptions. For example, if a rising rate of participation among 15-18 year olds is assumed but does not eventuate a large projection error may occur. The Borrie Report (Australia, Population 1975, pp.387-310) "preferred projection" which assumed rapidly rising age-participation ratios, showed school enrolments aged 15 and over at

1. The Age-Participation Method requires estimation of (a) the population by age for each year of the period under consideration, (b) the expected proportion attending school of each group in each year. Population by age projections are undertaken by the Australian Bureau of Statistics and by State Governments (e.g. in Victoria by the State Co-ordination Council). Population projections are provided on particular assumptions about fertility and migration (mortality held constant). The proportion of an age group attending school in past years is estimated from past enrolment and population data; assumptions about future proportions are usually related to recent proportions.

2. The Year-Progression Method (or Grade-Retention) requires an estimate of numbers likely in the first stable grade (e.g. Kindergarten in N.S.W. or preparatory in Victoria). For every other grade, enrolments are estimated by multiplying enrolments in the preceding grade the previous year by a grade progression ratio. The grade progression ratio for past years is the ratio of enrolment in a grade to enrolments in the preceding grade one year earlier. In South Australia use has also been made of an age progression method (see South Australia, 1980, p.3).

3. It is also argued that this method makes it possible "to assess directly the impact, for example, of changes in entry conditions or of school leaving age" (Queensland 1980, p.1). It is arguably a superior method for handling regional projections, though in Victoria considerable progress has been made using a year progression approach as part of the Simulation Options Model and in projecting individual school enrolments.

512,000 in 1976 whereas the actual enrolment was 469,000, an error of 8 per cent for the year after publication (Australia, Population and Australia - Recent Demographic Trends, 1978, pp.95-96). On the other hand reasonably accurate guesses as to future year-progression ratios have resulted on occasion in accurate estimates of both primary and secondary enrolments, e.g. Commonwealth Department of Education, Projected Enrolments in Australian Schools (March 1976).

Errors are likely to be greatest when, after a period of stability or continuing trend, a major change occurs that is not anticipated in the projections. As discussed below, major changes occurred in fertility and migration after 1971; and in participation of older teenagers after 1972. Projections made about this time (e.g. South Australia, 1971; Shears and Osmond, 1971; Schools in Australia, 1973; Borrie, 1972; Australia, Population, 1975), were generally very inaccurate as shown in Table 1.3.

It must be emphasised that forecasting errors in these circumstances arise from the sheer unpredictability of key variables. It is not a question of a better forecaster or a better model (other than one that displays a range of projections to illustrate the increasing degree of uncertainty over time).

Information supplied by the Queensland Department of Education shows that projections undertaken in the late sixties and early seventies involved errors approaching those for the South Australian and Victorian estimates in Table 1.3. Data supplied by Queensland and N.S.W. departments on projections from the mid-seventies generally show much greater accuracy for the four or five years covered so far, though errors of 3 per cent in three years in particular sectors have still occurred. The Commonwealth estimates from 1974 have been quite accurate in total, as shown in Table 1.3.

1.4 Fertility, Migration, Retention

1.4.1 Fertility

Changes in fertility from 1980 will not affect primary enrolments at all before 1985 and will not affect secondary enrolments this decade. However, it is still important to have an indication of the magnitude of longer term effects that possible changes in fertility might have on enrolments so that policy making in the eighties allows for possible variation in the nineties.

Table 1.3

Projection Error - Comparison of Actual and Projected Enrolments - 000s

Enrolments	1972	1973	1974	1975	1976	1977	1978	1979	Per cent error by 1979
<u>Australian Primary</u>									
Actual	1,821	1,811	1,813	1,819	1,842	1,875	1,895	(1,902) ^a	
Projected in									
1973 (Karmel Report)		1,827	1,841	1,866	1,909	1,959	2,005	2,053	8 in 6 yrs
1974 (Comm. Dept.)			1,811	1,821	1,850	1,886	1,908	1,924	1 in 5 yrs
1975 (Comm. Dept.)				1,823	1,851	1,887	1,907	1,917	1 in 4 yrs
1976 (Comm. Dept.)					1,843	1,880	1,903	1,911	0 in 3 yrs
<u>Vic. Gov. Primary</u>									
Actual	373	373	376	378	383	387	387	382	
Projected 1971, Shears	373	374	381	388	396	408	420	433	13 in 8 yrs
<u>Vic. Gov. Secondary</u>									
Actual	229	232	233	240	242	240	237	233	
Projected 1971, Shears	234	243	252	259	264	267	268	269	15 in 8 yrs
<u>S.A. Secondary</u>									
Actual	93	95	96	100	99	98	98	95	
Projected 1971, S.A.	95	99	103	106	109	110	111	111	17 in 8 yrs

Sources: Australia, Commonwealth Department of Education, Projected Enrolments in Aust. Schools annual; Shears and Osmond, 1971; Schools in Australia, (Karmel Report) 1973, Education in S.A., 1971 (medium projection).

Note: a. Estimate on definition applicable when projections made. Actual number for 1979 was 1884.

Projections of the population of Australia 1978-2011 were produced by the Australian Bureau of Statistics (ABS) in 1978. Individual state and territory projections were produced by ABS in 1979 and state governments and education departments themselves produce population estimates. Series A projection by the ABS assumes that the total fertility rate⁴ which had declined about 33 per cent from its 1971 level by 1978 would continue to decline until 1979 and then increase about 10 per cent by 1984 to 2.11 except for South Australia and Northern Territory for which lower and higher rates respectively are assumed (see ABS 3204.0, p.19). One reason for believing that fertility will recover a little is the expectation of married women, surveyed in 1976, that they will have eventually an average of 2.5 children. The recently published 1979 survey shows a slight increase in expected births among younger women (ABS, 3215.0). The fall in the fertility rate below the ZPG figure of 2.11 is seen therefore as due to postponement of first births and this deferment is projected to be completed in the early eighties.

Recent and projected levels of fertility for Australia as a whole are shown in Table 1.4 which also records total births. Whereas fertility fell 34 per cent between 1971 and 1979, births fell by about 18 per cent: the increasing numbers of women of child bearing age offset about half the decline in fertility. On the assumption that fertility stops falling and recovers slightly, the effect of continued increases in numbers in the childbearing ages will be a sharp increase in births in the eighties as shown in Table 1.4.

Alternative projections of births based on fertility about 10 per cent higher (Series C) and 10 per cent lower (Series B) have been prepared by ABS. Professor Caldwell (1979, p.4) regards Series A projection as shown in Table 1.4 and Series B, the lower projection, as more plausible. It may be noted however, that actual births in 1979 and 1980 financial years were above or on line with Series A figures, though there are variations across states, which as noted by the Queensland Department (1980, p.2), affect the usefulness of the ABS projection. Fertility could, of course, fall to lower levels. In England it fell to 1.7, or some 15 per cent lower than in Australia in 1977,

4. Total Fertility rate equals the sum of the age-specific fertility rates in a given year; it represents the number of children a woman would have over her lifetime if she experienced the fertility of the given year.

Table 1.4
Fertility and Births - Australia

	Total Fertility Rate			Births (Year ending June)		
	Actual	Projected	Index 1976=1.00	Actual	Projected	Index 1976=1.00
1966	2.88		1.38	223		.97
1971	2.95		1.42	271		1.17
1972	(2.74)		1.32	272		1.18
1973	2.44		1.17	256		1.10
1974	2.34		1.13	244		1.06
1975	2.17		1.04	240		1.04
1976	2.08		1.00	231		1.00
1977	2.04		.98	226		.98
1978	1.98	(1.93)	.95	226		.98
1979	1.94	(1.91)	.92	223	(220)	.96
1980		1.92	.92	224	(224)	.97
1981		1.96	.94		231	1.00
1982		2.03	.98		241	1.04
1983		2.07	1.00		250	1.08
1984		2.11	1.01		258	1.12
1985		2.11	1.01		264	1.14
1986		2.11	1.01		266	1.15
1987		2.11	1.01		268	1.16
1988		2.11	1.01		270	1.17
1989		2.11	1.01		272	1.18
1990		2.11	1.01		273	1.18

Sources: ABS Projections of the Population of Australia 1978 to 2011
Cat. No.3204.0 (Series A projection).
ABS Australian Demographic Statistics Quarterly, December, 1979 and
March, 1980, Cat. No.3101.0
ABS Year Book, Australia

Notes: Births include births after arrival by migrants, projected at 50,000
net per annum. A more recent ABS study, Projections of the
Population of Australia 1980 to 2001 (unpublished July 1980) bases
projections on 80,000 net migration but defers recovery in fertility
to 2.11 until 1987.

Table 1.5

Effects of Alternative Fertility and Migration
Assumptions on School Enrolments - Australia

(Approximate per cent variation from Projections
in Table 1.1)

	Primary			Secondary		
	<u>Fertility</u>		<u>Migration</u>	<u>Fertility</u>		<u>Migration</u>
	Series B	Series C	Net 70,000	Series B	Series C	Net 70,000
1985	0	0	1	0	0	1
1990	-6	6	3	0	0	2

Source of Data: ABS Population Projections 1978-2021, microfiche supplied by ABS.

Notes: Series B projection assumes about 10 per cent lower fertility than Series A, and Series C assumes 10 per cent higher fertility than projection A. Series A, B and C assume net migration of 50,000 per annum. Allowance has been made in this table for actual births in 1979 and 1980 at Series A level by postponing the effect of alternative fertility assumptions by 2 years compared with ABS data. The full effect (about 10 per cent) of alternative fertility assumptions would be felt on primary school enrolments by 1994.

but there too it is projected to recover to 2.1 (DES Report, 1979, p.3). In U.S.A. the preferred projection of population underlying school enrolment projections is also based on a fertility rate of 2.1 (U.S.A., 1978, p.157).

The index of primary enrolments shown in Table 1.1 at 94.7 in 1990 would recover to 100 by about 1992 on Series A projection. If fertility fell in 1981 to the Series B projection level, then the primary enrolments index would be around 92 in 1992. On Series C fertility, the high variant (which though less likely cannot be ruled out), the enrolments index would be about 108 in 1992. The effects on enrolments to 1990 are shown in Table 1.5. Note that the fertility variation considered here is only about 10 per cent, whereas the fertility rate fell about 34 per cent in the seventies.

Fertility varies by religion, by rural/urban residence, by workforce participation, by education level, and slightly by country of birth (see Ruzicka and Caldwell, 1980). However, the impact of any of these factors on enrolments is difficult to predict. In the eighties any impact seems likely to be very small.

1.4.2 Migration

Variability in *overseas* migration is less likely to have a sizeable impact on enrolments than fertility (Caldwell, 1979, p.2) but its impact can be more immediate; it can affect secondary as well as primary enrolments, and future births. The projections of population discussed above assume 50,000 net migration annually, whereas L-NCP Government policy is for a higher rate "... Australia's present policy entails a broad population growth goal of 0.5% annually" (Mackellar, 1979, p.103) or about 70,000. For example, migration at 50,000 per annum is estimated to contribute about 5 per cent of primary enrolments by 1987 and about 7 per cent by 1990. Hence, continued migration at the higher rate of 70,000 per year,⁵ which has occurred in 1979-80, could result in about 3 per cent higher primary enrolments by 1990, and about 2 per cent higher secondary enrolments. These effects are shown in Table 1.5. Higher migration (with the age distribution assumed by ABS), together with Series C higher fertility could lead to primary enrolments some 9 per cent higher in 1990 than projected (or considerably higher than in 1979) with even larger upward variation in the early nineties. Migration at 70,000 would not, however, offset the reduction in enrolments that would follow from Series B lower fertility. The effects of migration on secondary enrolments would be slightly smaller than for primary, but of course fertility changes have no effect on secondary enrolments in the eighties.

Changes in *interstate* migration could have a larger impact on a State's enrolments than overseas migration. For example, in the years 1974 to 1977 N.S.W. lost on average fifteen thousand persons a year through interstate migration offsetting most of the eighteen thousand gain from overseas migration (ABS, 3101.0). But in 1978 and 1979 interstate losses were almost

5. The most recent population projection prepared by ABS, Projection of the Population of Australia 1980 to 2001 (unpublished July 1980) are based on net migration of 80,000 per annum.

negligible, resulting in a marked increase in the total population growth rate from 0.86 per cent in 1977 to 1.33 per cent in 1979. The implicit level of net migration appears to be a factor in the stronger recovery in the late eighties in projected enrolments in N.S.W. compared to Victoria.

Victoria has continued to lose heavily through interstate migration and has been joined by S.A. since 1977. The States making the greatest gain are Western Australia and Queensland; States where employment opportunities are expanding relatively rapidly. South Australia in particular suffers high unemployment and stagnant total employment (ABS, 6203.0). While we might expect such a pattern of interstate migration to continue, sharp reversals such as in N.S.W. since 1977 must be recognised as possible or even likely. Depending on the age distribution of interstate migration the effect of such a change on a State's enrolments could be much larger than that of *changes* in overseas migration discussed above. They could if sustained easily add or subtract about 6 per cent to total enrolments in a decade.

1.4.3 Secondary Retention

The Commonwealth's projections of secondary enrolments imply roughly constant age-participation rates to 1990. In recent years, for 15 to 18 year olds, only the participation rates of 15 year olds have increased markedly, from 81 per cent in 1974 to 88 per cent in 1979. Rates for 16 and 17 year olds have fluctuated with increases concentrated among girls. There has been little change for 18 year olds.

To illustrate the possible size of error in secondary enrolment projections let us assume that participation of 15-18 year olds rises as much between 1979 and 1990 as it did between 1969 and 1979. In this case enrolments of 15 to 18 year olds would increase about 13 per cent. This would imply that the proportion of 15 year olds at school rises from about 88 per cent in 1979 to 97 per cent in 1989; the proportion of 16 year olds rises from 59 per cent to 69 per cent; and for 17 year olds from 32 per cent to 37 per cent over the decade. Such increases are much smaller than those thought highly probable a decade ago (see Education in South Australia, 1971, p.68).

Since 15 to 18 year olds constitute about 45 per cent of total secondary enrolments the effect would be to increase total secondary enrolments by about 6 per cent. Hence it is possible that projection errors can be as large within the decade for secondary enrolments as for primary, even though changes in fertility cannot affect secondary enrolments in that time. And an increase in upper secondary enrolments is expensive relative to junior secondary enrolments.

What is the likelihood of such changes in retention in government schools, and in particular States? Details of student intentions surveyed by the ABS and expected shortly will be of considerable interest. Information in the preliminary publication ABS, 4211.0 is not provided for students in single school years and therefore does not indicate likely retention to, say, years 11 or 12. Here we can note briefly some of the major factors affecting secondary school enrolments:

- (a) *Structure of secondary schooling* (including type of curriculum, certificates awarded, junior/senior structures, minimum leaving age, TAFE courses). The apparent retention of 67 per cent of pupils to year 11 in Victoria in recent years compared to about 40 per cent in N.S.W. is particularly notable in this context.
- (b) *Family income*. Studies in U.S.A. (e.g. Edwards, 1975) have shown a positive relationship between family income and school enrolment. After the sharp rise in wages in 1974 average weekly earnings barely kept pace with inflation until 1980. Furthermore, skill differentials fell in real terms. Recent and projected increased growth in real earnings in the eighties could promote school retention.
- (c) *Education of parents*. The association of school attendance with education of parents should imply steady upward pressure on secondary retention.
- (d) *Employment prospects on completion of schooling*. This factor also relates to career prospects after participation in post-secondary education. The Income Distribution Surveys 1968-69 and 1973-74 (ABS Ref. No.17.6, 17.17) showed a marked relative decline in the income of male graduates and improvement for

female graduates. At the same time graduate employment for women, mainly in teaching, was expanding very rapidly. Retention of girls to year 12 rose rapidly until 1978, while that for boys slackened (with interstate differences). Recently progression to higher education has declined, (Karmel, 1980). Projected expansion in the resource based industries, together with expansion in some related manufacturing activities suggest increased future demands for those with education, skills and mobility. These new demands could well raise school retention rates.

- (e) *Relative financial incentives for school participation.* A number of factors are relevant: unemployment benefits; TEAS (insofar as it encourages retention to the end of secondary school); CRAFT (as a factor encouraging boys to leave school and gain apprenticeship); any allowances developed under the Transition Program.
- (f) *The rate of youth unemployment.* The effect is not clearly positive. Retention to year 10 has risen sharply since the onset of high teenage unemployment late in 1974. However, for boys retention to year 12 has fallen each year since 1972 except 1975 and 1976. Gregory and Duncan in various papers (e.g. High Teenage Unemployment, 1980) have suggested that unemployment should discourage labour force participation and hence encourage higher school retention but that unemployment benefits have offset the effects for boys. However, they neglect several factors such as (b) and (d) above, which could also account for some of the changes (see Burke, 1980).
- (g) *The nature of employment available on leaving school.* There has been a sharp swing in the employment available to teenagers to a part-time basis. Full-time work, for females especially, has been particularly severely reduced.
- (h) *Community attitudes to the value of education.* One of the objectives of the Transition Program is to affect the community's attitude to education, presumably to increase retention.

1.5 Conclusion on Projection Errors

The projections presented by the various systems are arguably the best that could be prepared. But on the basis of past experience, errors cumulating at 1 per cent per annum or in excess of 10 per cent over a decade must be seen as quite likely for a government system in a particular State or Territory. It would seem important to communicate this uncertainty to Ministers when longer term decisions are being taken on capital needs or provision of staff or retention of sites. In this context the practice of several systems in preparing alternative sets of projections, some incorporating variations as large as 10 per cent over the decade is commended. It is clear that annual revision of projections is essential; and that projections should not be used without reference to their preparation date. A small variation in total enrolments, in their distribution between States, within States and between systems, can mean a very large variation in new classrooms required or new staff required. In the case of staff there are consequent implications for teacher education.

Given the uncertainty and presumably an unwillingness to provide buildings or teachers which may not be needed, there is an obvious requirement for flexibility in policies concerned with both buildings and personnel. For personnel, the additional and larger impact of variations in resignations must also be considered. These issues are basic to some of the policy options considered in later chapters.

1.6 Some Preliminary Arithmetic of Educational Expenditure

1.6.1 Expenditure Summary

Later sections of this report will consider the financial implications of such factors as the ageing of the teaching workforce or changing size of school. In this section an estimate is made of the size of the recurrent budget for schools assuming (a) that no change is made in per pupil expenditure (at constant prices) and (b) that no provision is made for cost factors such as those associated with the increasing age of teachers or changing size of school which affect the quality of provision of education. As outlined below, these estimates show:

- (i) that despite the decline in total school enrolments shown in Table 1.1 there would be little change in total recurrent expenditure: the growth in secondary enrolments, at a considerably higher per capita cost, offsets the larger numerical decline in primary enrolments until the late eighties;
- (ii) that expenditure would fall substantially as a proportion of GDP and presumably of government expenditure. In other words, recurrent expenditure per pupil could be increased by 20 per cent or more without increasing the percentage of GDP going to schools. Such an increase could cover not only the cost increases associated with the changing pattern of enrolments or with the changing structure of the teacher workforce, but also allow for improvements in the quality of provision. Alternatively, declining enrolments offer some scope for reductions in total expenditure as a percentage of GDP while increasing expenditure per student.

1.6.2 Estimates

Table 1.6 shows estimates of public recurrent expenditure on schools in the years 1979-80, 1980-85 and 1989-90. The major assumptions are listed below. It is assumed that the recent ratio of average expenditure on secondary pupils to primary pupils will be maintained. In some states it is policy to reduce the primary to secondary differential. Against that, from the mid-eighties the proportion of secondary pupils in the more expensive senior secondary years will rise as a proportion of all secondary enrolments for demographic reasons. The Schools Commission (1979, p.143) estimated recurrent expenditure per pupil in primary schools at 62 per cent of that for secondary schools, though the figure was as high as 73 per cent in Queensland and as low as 57 per cent in the A.C.T. The estimates assume, as already discussed, no change in real expenditure per pupil which could imply declining standards since no provision is made for "incremental creep", (i.e. wage increases due to ageing of teachers), increasing superannuation and long service provision or costs associated with smaller average size of schools.

Table 1.6
Projections of GDP and Recurrent Public
Expenditure on Schools - Australia
(\$000 million 1979-80 prices)

	GDP		Recurrent Expenditure on Schools					
	A growth at 1.4% per annum	B growth at 3.4% per annum	Primary	Secondary	Total C	C as % GDPA	Total D D	D as % GDPB
1979-80	114	114	1.95	1.85	3.65	3.20	3.65	3.20
1984-85	122	135	1.78	1.99	3.63	2.98	3.96	2.93
1989-90	131	159	1.84	1.81	3.51	2.68	4.17	2.62

Sources: Australia, Schools Commission, Australian Students and Their Schools, 1979.
Australia, 1980-81, Budget Paper, No.9. National Income and Expenditure 1979-80.

Notes: Assumptions underlying GDP and expenditure estimates:

1. Enrolments in primary and secondary schools are projected to change in proportion to total primary and secondary enrolments projected by Commonwealth Department 1980.
2. No adjustments made for changes in proportion of pupils in non-government schools or aid to non-government schools.
3. Expenditure per secondary student assumed to be 1.61 of expenditure per primary student.
4. Estimate A of GDP assumes no productivity increase: GDP growth equal to growth in labour force.
5. Estimate C of expenditure assumes no change in real wages per employee in schools.
6. Estimate B of GDP assumes a 2 per cent per annum increase in output per worker.
7. Estimate D of expenditure assumes educational costs rise by 1.75 per cent per annum because wages and salaries rise with productivity (2 per cent per annum) and non-wage expenditure rises at 1 per cent per annum. Wages and salaries are assumed to be 75 per cent of recurrent expenditure.
8. Per pupil expenditure is assumed constant at 1979-80 levels for primary and secondary pupils; no adjustments for ageing of teacher workforce (incremental creep) or for costs associated with changing size of schools.

The first estimates of expenditure, Total C in Table 1.6, show little change in expenditure between 1979-80 and 1984-85: the reduction in expenditure on primary schools is offset by increased expenditure on secondary schools. Between 1984-85 and 1989-90 a more noticeable reduction of nearly 4 per cent occurs.

At the same time GDP (and government revenue) is presumed to increase. As a first approximation, A, GDP is presumed to grow at 1.4 per cent per annum in line with the projected increase in the labour force, with productivity increase at zero. In the period August 1975 to August 1980 total employment grew at 1.4 per cent per annum (the labour force, including unemployed, at a higher rate). On these assumptions GDP would grow by about 15 per cent in the decade to 1989-90. Since expenditure on schools is shown to fall by about 4 per cent, then school expenditure as a percentage of GDP is shown to fall from 3.2 to 2.7 per cent.

Alternatively, let us assume that productivity grows at about 2 per cent per year, the average rate per year for the period since 1972-73 (Australia, 1980-81 Budget Paper, p.27). On this assumption, GDP will grow about 39 per cent over the decade. If teachers' salaries and other wages and salaries were held constant in real terms then educational expenditure would fall from 3.2 per cent of GDP to 2.2 per cent. Award increases for teachers over the last five years have generally been less than price increases as measured by the Consumer Price Index, or by implicit deflators of GDP.⁶ In U.S.A. (U.S.A. 1979, p.49), in a period of teacher surplus, teachers' salaries did not keep pace with inflation and so declined in real terms.

Alternatively we can assume a brighter future for teachers as did the Williams Report (Australia, Education, Training and Employment, 1979, Vol.2, p.43): that wages and salaries rise in step with productivity, and that non-wage and salary items of recurrent expenditure benefit by half the productivity increase. On these assumptions educational expenditure would rise as shown in Total D. In this case expenditure as a percentage of GDP would fall to 2.62 per cent.

6. The extent to which this has been offset in some states by incremental creep and other labour costs is discussed later in this report.

In summary it seems likely that a large increase in educational expenditure per capita would be possible in the next decade without increasing the proportion of GDP devoted to education above the 1979-80 level. This increase per capita could be between 19 and 44 per cent. Any cost problems arising from changing enrolments should be seen in this context: it should be possible to accommodate unavoidable cost changes and increase quality of provision of education within a constant or even declining percentage of GDP. Those states such as Western Australia or Queensland which overall will not have problems of declining enrolments in the eighties seem likely to be faced with more pressure on their budgets in relation to GDP than say South Australia or Victoria. On the other hand these States with expanding enrolments also face somewhat brighter economic prospects in association with the growth of their mineral resource projects.

If, as discussed earlier, secondary retention rates rise rapidly, or overseas migration and fertility increase, school enrolments could rise more rapidly than projected. These occurrences are likely if the economy is buoyant, and if the benefits of the minerals boom eventuate and are widespread. In this situation demands for educational expenditure would be greater than considered in this section. But, as discussed in the Williams Report, (Australia, Education, Training and Employment, 1979, p.66) and as implied above, there should be little difficulty in a rapidly growing economy in finding the extra revenue.

CHAPTER 2: CHANGE AND UNCERTAINTY IN TEACHER EMPLOYMENT

2.1 Introduction

The last twenty years have seen a very rapid increase in the size of the teacher workforce, and the seventies also saw a sharp improvement in the qualification level of those appointed. In the thirteen years from 1966 to 1979 the number of teachers employed grew over 75 per cent whereas pupil numbers grew about 20 per cent. In 1979 student numbers were only 6 per cent higher than in 1971 whereas teacher numbers were some 39 per cent higher.⁷

The rapid expansion in teacher employment, together with the high rate of resignation of teachers, particularly female teachers, meant rapid promotion for teachers remaining in service and a reducing mean age of teachers. From the mid-seventies both the total rate of growth in teacher numbers and the rate of resignation have declined. This has meant reduced prospects of promotion for a teacher of a given age with adverse consequences for morale. At the same time it has resulted in a rising age of teachers in the assistant class. The positive aspect of this is the increased level of experience among teachers and a reduced turnover of teachers in schools. It does, however, mean an increase in the average salary paid to assistant teachers (incremental creep) as a greater percentage of assistant teachers are near the top of the salary scale compared with a period of rapid recruitment of newly trained teachers. Ageing of teachers is also associated with extra costs for leave and superannuation. There has also been reduced opportunity to enter teaching for young people completing secondary school from the mid-seventies, and associated reductions in the size of pre-service teacher education.

Policy options affecting the size and structure of the teaching workforce will be discussed in later chapters of this report. In this chapter we seek to establish the dimensions of possible changes in major factors (apart from enrolments discussed in Chapter 1) affecting the size and structure of the teacher workforce: staffing standards and resignations.

7. The increase in the proportion of enrolments in secondary schools from 35.1 to 36.9 per cent 1971 to 1979 accounts for about 1 per cent of increase in teacher numbers. The proportion in secondary schools is projected to rise to 40.8 per cent in 1985 (Commonwealth Department, 1980).

Staffing standards are reviewed in section 2.2. Section 2.2.1 discusses the reduction in pupil-teacher ratios (PTR's) in the seventies, the apparent differences between States, and the relationship between PTR's, size of school, class size and "non contact" time for teachers. Section 2.2.2 considers apparent commitment to improved staffing in primary schools but illustrates the lack of predictability of past increases in staffing standards.

Section 2.3 discusses recent and projected wastage of teachers with particular attention to: the interaction of wastage with growth in teacher numbers and the age and sex structure of the teacher workforce; the relation of resignations to the state of the economy; differences between states. Section 2.4 considers implications of alternative growth rates and wastage rates for teacher supply and policies for recruitment. The conclusion, section 2.5, discusses a range of implications such as the need for flexibility in staffing and the possibility of shortages particularly in specialist areas.

2.2 Staffing Standards and Total Teacher Employment

2.2.1 Staffing Ratios Past and Present

As already indicated in section 2.1 improved staffing standards rather than increased enrolment caused the rapid growth in teacher numbers in the seventies. The gross ratio of pupils to teachers fell from about 26 in 1966 to about 17 in 1979. In other words, three teachers were employed in 1979 where two would have been employed in 1966. The improvement in staffing standards was fastest in the early seventies, averaging about 3.8 per cent per annum in the period 1971 to 1977 compared to about 2.5 per cent in the late sixties and late seventies. Table 2.1 documents some aspects of growth.

Table 2.1
Teachers, Students and the Labour Force - Australia
000s

	1966	1971	1976	1977	1978	1979	1980
Total Primary and Secondary Teachers	103.9	131.8	167.9	175.9	179.1	183.5	n.a.
Index 1971=100	79	100	127	133	136	139	
Annual Rate of Growth %	4.9	4.8	4.7	2.2	2.5		
Total Primary and Secondary Students	2504	2807	2960	2995	3010	2987	2985
Index 1971=100	89	100	105	107	107	106	106
Annual Rate of Growth %	2.3	1.1	1.2	0.5	-0.8	-0.1	
Labour Force	4907	5608	6191	6355	6365	6415	6639
Index 1971=100	88	100	110	113	113	114	118
Annual Rate of Growth	2.7	2.0	2.6	0.2	0.8	3.5	

Source: ABS *Schools* Cat. No.4202.9, *School Enrolments*, 1980 Preliminary Cat. No.4201.0.

ABS, *The Labour Force* Cat. No. 6204.0

See also Burke (1979, p.18)

Note: The teacher and labour force numbers are for persons, not full-time equivalent. Teacher numbers are for government and non-government schools. Full-time equivalent number of teachers was 98.0 in 1966, 123.9 in 1971, 159.4 in 1976 and 175.2 in 1979.

Incidentally for 1972, the base year for the Karmel Report, the teacher index was 105, the pupil index 101 and the labour force index 103.

The present outlook is considerably different from 1971 when most governments were concerned to improve staffing standards. The apparent surpassing of the Karmel targets of a 40 per cent improvement (from 1972) in recurrent resources per primary pupil and 35 per cent per secondary pupil may have been a factor in reducing government commitment to increasing resources. More important has been the overall stringency in government expenditure.

Some observations can be made about existing ratios. Firstly, as shown in Table 2.2 there is a marked difference between States and Territories in PTR's. If the Australian average were to be reduced to that of the lowest ratio, approximately 9 per cent more teachers would be required.⁸ This represents about 16,000 teachers.

Secondly, a survey conducted by the Australian Teachers Federation (1980) indicates that differences in class size between States are not as marked as differences in PTR's. Nor are class sizes as low as might have been expected. The main explanation is the proportion of teacher time spent in classroom teaching. And this is in turn accounted for by variation in provision of teachers for administrative positions such as deputy principals, in specialist positions such as careers teachers, and in provision of non-contact or preparation time for classroom teachers. The extent of provision for administrative and specialist personnel is not only a matter of explicit policy decision but also usually a function of school size. States with relatively small secondary schools appear to have a smaller proportion of the time of teaching personnel spent in classroom teaching.

It is important to note that the educational case for small schools and small classes cannot be dismissed out of hand. Recent attention has been given to the work of Rutter et al. (1979) which suggested that *class size* was not of importance in pupil performance. However, the statistical foundations of Rutter's work have been questioned (Preece 1980, see also Heath and Clifford 1980). On the other hand, Glass et al. (1979) after statistical analysis of a large number of previous studies found a strong positive relationship between pupil performance and reductions in class size, particularly in class sizes below 20: "There is little doubt that, other things equal, more is learned in smaller classes" (p.15).

The case for and against small *schools* is reviewed by Rideout et al. (1977). An important factor is the impersonality of large schools as evidenced by the lesser involvement of pupils in activities in larger schools (Campbell, 1976). It is arguable that this particular disadvantage can be

8. A part of the difference between states could be accounted for by definitional differences.

Table 2.2
Pupil:Teacher Ratios - Australia 1979^a

	Government	Catholic	Other Non-Gov't	Total Non-Gov't	All Schools
PRIMARY					
New South Wales	21.8	25.1	17.1	23.8	22.2
Victoria	19.1	24.3	16.4	22.5	19.8
Queensland	20.5	25.0	21.2	24.7	21.2
South Australia	18.3	21.8	17.4	20.5	18.5
Western Australia	21.7	23.3	17.8	22.2	21.8
Tasmania	18.4	24.5	18.7	22.9	19.0
Norther Territory	18.4	22.9	17.5	22.2	18.9
Australian Capital Territory	19.9	23.5	18.9	22.9	20.6
Australia	20.3	24.4	17.3	23.1	20.8
SECONDARY					
New South Wales	12.9	17.0	13.2	15.9	13.6
Victoria	11.2	17.0	13.2	15.4	12.2
Queensland	13.8	17.6	15.4	16.9	14.6
South Australia	11.8	16.5	12.4	14.6	12.3
Western Australia	13.1	15.3	12.4	14.2	13.3
Tasmania	12.2	16.9	11.5	14.4	12.5
Northern Territory	10.6	15.6	-	15.6	11.1
Australian Capital Territory	11.6	18.8	13.8	17.3	12.9
Australia	12.3	17.0	13.3	15.6	13.0
ALL SCHOOLS					
New South Wales	17.5	21.1	14.6	19.7	17.9
Victoria	15.1	20.8	14.1	18.6	15.8
Queensland	17.9	21.8	16.5	20.6	18.4
South Australia	15.4	19.4	14.2	17.4	15.7
Western Australia	18.0	19.5	13.9	17.7	18.0
Tasmania	15.4	20.8	13.8	18.2	15.8
Australian Capital Territory	15.8	21.5	15.5	20.2	16.8
Australia	16.5	20.9	14.5	19.1	17.0

a: All rates are based on 1979 school enrolments and teacher numbers. The pupil: teacher ratio is the total number of pupils divided by the total number of teachers (in full-time equivalent units).

Source: *Education News*, Vol.17, No.3, 1980, p.47 and Schools Commission *Statistical Bulletin*, December 1980. Derived from figures supplied by the Australian Bureau of Statistics. Figures for 1979 are not strictly comparable with those of earlier years because of the exclusion in 1979 of a number of pre-primary pupils and teachers.

Note: Caution should be exercised in interpreting these statistics. The ratios are not measures of average class sizes. Furthermore, there are both inter- and intra-state variations in treatment of teacher numbers. For example, there are no part-time teachers reported for Queensland government schools. In Victoria some teachers listed as secondary teachers could be involved in TAFE.

overcome by the development of mini-schools or pastoral groups within large schools. Some States have opted for a generally larger size of secondary school, as shown in Table 2.3. New South Wales, Western Australia and Queensland which have the highest PTRs in secondary education (as shown in Table 2.2) also have a large proportion of schools with more than 1,000 pupils. And in the case of Western Australia and Queensland these enrolments are spread over only 5 years - 8 to 12. Victoria, the state with the lowest apparent pupil-teacher ratio, has only 21 per cent of its secondary schools with more than 800 pupils, compared with New South Wales, 56 per cent.

The case for additional staffing for say TAFE or, for example, for counselling, for teaching of migrant languages, for the teaching of the handicapped, for the provision of study leave as recommended by the Auchmuty Committee (Australia, Report, 1980) is not considered in this report. Nor does the report consider additional needs for pre-school teachers arising from extended provision of services as mooted in South Australia. That does not mean we assume there is no case for such additional staffing. At this stage these are treated as factors affecting the ability to make accurate projections, discussed in section 2.2.2 below, or affecting wastage⁹ discussed in section 2.3.

2.2.2 Projection of Staffing Standards: Expectations and Errors

Few states make a firm commitment to a particular standard of provision or rate of progress to that standard. In N.S.W. where about a third of Australia's teachers are employed, projections (N.S.W., 1979, p.7) were based on a substantial improvement in government primary PTR's from 23.0 in 1978 to 17.8 in 1987 in government schools. The assumptions include "class size reductions, reductions in face to face teaching for primary teachers and increases in numbers of school librarians, counsellors, and executive positions in schools and in numbers of special, resource and remedial teachers" (p.7). This represents 29 per cent more teachers employed in 1987 or increases of 2.9 per cent per annum, than if constant 1978 PTR's were applied. At the secondary level an improvement from 13.9 to 12.3 was indicated, or 13 per cent more teachers than if PTR's remained unchanged.

9. Increased demand for teachers in TAFE could lead to increased resignations of secondary teachers.

Table 2.3
Percentage Distribution of Government Secondary Schools by
Size of Enrolment^a (1979)

	0-300	301-400	401-600	601-800	801-1000	1001-2000	Total ^e	Total Schools
Australia	11	7	18	26	22	16	100	1136
NSW	4	6	11	24	31	25	100	(353)
VIC	15	8	24	32	17	4	100	(389)
QLD	16	9	18	13	19	25	100	135
SA	11	7	20	21	22	19	100	(100)
WA	10	8	16	16	16	33	100	79
TAS	5	7	36	33	19	-	100	42
NT	33	-	-	17	33	17	100	6
ACT	5	5	14	64	14	-	100	22

Source: Data for Australia is taken from ABS *Schools, Australia* 1979, p.17, whereas State data are from AEC, *Statements, 1980*. ABS totals for NSW are 361, for Victoria 390 and for SA 101

Notes: a: Schools with exclusively secondary enrolments
e: Rows may not add to 100 due to rounding

Victoria has a policy of reducing primary pupil-teacher ratios about 5 per cent over the next two years but no variation in secondary standards is envisaged. Queensland has an optimum standards policy which has not yet been achieved: ratios in 1979 were 94 per cent of desired standard at primary level and 83 per cent of desired level at secondary. However, in the recent budget speech the Queensland Treasurer stated:

"The Government has taken the decision that future allocations to Education out of the State Budget will be sufficient to cover increased costs and will increase in line with student enrolments."

In Western Australia "Estimates of future needs for teachers by the Education Department are based on the assumption that pupil-teacher ratios will remain at the current level", (AEC, Statements, 1980).

In South Australia the PTR in government primary schools is expected to fall about 4 per cent between 1980 and 1987. The secondary PTR is projected to decline a little to 1984 and then potentially to decline substantially with falling enrolments (South Australia, 1980).

In Tasmania a fall of about 13 per cent in primary PTR from 1980 to 1983 was assumed in recent projections and a fall of 2 per cent in secondary PTR's (Tasmania, 1979).

Non-government schools are affected by Commonwealth and State aid which is expected to increase as a result of election promises. Numbers of non-government teachers increased more rapidly than government teacher numbers in the period 1977-79.

On the evidence available it does appear that there is an intention to provide for reasonably substantial reductions in PTR's in primary schools in several states, though considerably smaller reductions than occurred in the mid-seventies. At secondary level only N.S.W., and S.A. from the mid-eighties indicate substantial improvements.

Australia-wide projections prepared, for example, by the Tertiary Education Commission (TEC 1979, Table 3) allow for an improvement of about 10 per cent in primary staffing ratios by 1987 and only about 2 per cent at secondary level.

We must note that *changes in staffing standards are notoriously unpredictable*. In the seventies the improvements were far greater than would have been expected at the beginning of the decade. For example, Shears and Osmond in 1971 prepared estimates to 1976 for the secondary division of the Victorian Department on the basis of PTR's of 17 to 1 and 16 to 1. The actual ratio in 1976 was 12.7, or about 25 per cent more teachers than required to achieve a ratio of 16 to 1.

Even in our current stringent - even pessimistic - situation, expectations of staffing ratios have been surpassed. The actual PTR's in 1979 were 20.8 (1979) for primary and 13.0 for secondary (ABS, Schools 1979, p.13): about 1.5 per cent better than projected by the TEC. At secondary level the increase in 1979 equalled the whole improvement in PTR projected by the TEC to occur by 1987. Teacher numbers were *underestimated* by nearly 2000 in the TEC high estimate and 2,500 on their low estimate¹⁰ (TEC 1979, Table 4). Table 2.4 shows actual total employment of teachers from 1976 compared to projections made in 1976, 1978 and 1979. Errors range up to 5 per cent for the Australian total of secondary teachers after 3 years. Larger errors occurred in some of the projections for individual states. Only a small part of these projection errors for Australia as a whole are due to error in enrolment projections. Enrolment projections made in 1976 were within 0.2 per cent of the 1979 number for secondary students and 0.5 per cent at primary, though they are not always so accurate (as shown in Table 1.3).

It is our conclusion that errors in projection of total teacher numbers of the order of 2 per cent per annum, 10 per cent in 5 years and 20 per cent over 10 years are quite likely for a State system. Of course in the government sector a firm commitment to a particular level of funding could lead to projections being actually realised. This has not happened in the past. And other countries experience difficulty forecasting funding for teachers too (see OECD, 1979, p.45).

The significance of errors in projection of the size just discussed will be considered further below. But, in brief, an error of 2 per cent in

10. Actual teacher numbers were 1.0 per cent to 1.4 per cent in excess of TEC projections, overall. Enrolments were overestimated by about 0.4 per cent.

Table 2.4
Projections of Teacher Demand and Actual Employment - Australia
000s

					<u>Projection</u> <u>1979</u> <u>divided</u> <u>by</u> <u>Actual</u>
		<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>
Primary					
	Actual	81.7	85.9	87.9	90.7
	Projected Com 1976	81.6	85.5	84.8	91.8
	AEC 1978 i		87.4	88.4	88.7
	ii		87.4	90.0	92.3
	TEC 1979				90.0
Secondary					
	Actual	77.6	81.0	82.7	84.5
	Projected Com 1976	77.9	79.6	80.0	80.6
	AEC 1978 i		82.1	81.3	80.6
	ii		82.1	84.6	85.9
	TEC 1979 i				82.7
	ii				83.4

Source and Notes: Number shown in equivalent full-time units; actual persons would be higher.

Actual - ABS Schools Cat. No.4202.0

Com 1976 - Australia, Draft Report of a Joint Study Group on Teacher Supply and Demand in Primary and Secondary Schools, Department of Education, Canberra 1976.

AEC 1978 - Supply of and Demand for Teachers in Australian Primary and Secondary Schools, Report of the AEC Working Party. AGPS, Canberra 1978.

(i PTR's held constant)

(ii PTR's falling)

TEC 1979 Tertiary Education Commission, Working Paper on the Supply of and Demand for New Teacher Graduates in the 1980s, October 1979.

(i Constant age-participation ratios)

(ii Increasing age-participation ratios)

total demand represents a large error in relation to recruitment, particularly in a period of low wastage rates. It could represent a 33 per cent variation in recruitment¹¹ with implications for the age structure of teachers and the size of teacher education institutions.

2.3 "Wastage" of Teachers

The literature in this field uses the word "wastage" to mean all departures from teaching resulting from death, resignation and retirement. While we would prefer to use a less pejorative word such as "departure", for the sake of consistency with some other reports in the field, we refer to so-called "wastage" rates when we mean departure from teaching.

2.3.1 Size

Average wastage rates for Australia are shown in Table 2.5. Wastage rates almost halved in the period 1974-78 and are projected by the TEC (1979) to fall about another 1.5 percentage points to 5.5 in 1983, rising again to 6.9 per cent in 1990.

Table 2.5
Annual Wastage Rates of School Teachers - Australia
Actual and Projected - Per Cent

	Primary	Secondary
1974	12.0	14.5
1977	9.0	10.0
1978	7.2	7.0
1981	6.1	6.1
1983	5.5	5.5
1984	5.7	5.7
1987	6.3	6.3
1990	6.9	6.9

Source: TEC 1979, Table 5.

11. If recruitment otherwise equalled 6 per cent of the teacher stock.

Whereas improved staffing standards have been the major factor in total employment, wastage has been, and will continue to be, the main source of new jobs. For example, in 1978 total employment of teachers increased about 2 per cent whereas replacement of wastage equalled about 7 per cent of teachers.

Teacher wastage rates vary across systems as well as over time. The wastage rate for government schools in South Australia in 1979 was about 4.1 per cent. In Victoria the rate for classified teachers in the year to 31 March 1980 was about 4.7 per cent; in Queensland about 6.8 per cent for full-time teachers in 1979. In Western Australia a rate about 7.9 per cent was used in recent projections.¹² As indicated in the discussion of PTR's a difference of 3.8 percentage points, the difference between South Australia and Western Australia's wastage rates can have a very large impact on recruitment. Recruitment in 1979-80 in South Australian Government schools would have been approximately 60 per cent higher if the Western Australian rates applied.

It is instructive to compare South Australia to other states: until the early seventies wastage rates in South Australia were about 14 per cent. As discussed below factors affecting wastage changed earlier and more dramatically in South Australia.

2.3.2 Explaining Wastage

At any time there are differences in wastage by, for example, age or sex or marital status or qualification. Over time, changes in institutional arrangements such as relative salary, or conditions for leave or retirement or availability of part-time work, may disproportionately affect particular groups. Social factors such as changes in patterns of family formation may be important. But the major factor since the mid-seventies in explaining changes

12. Inclusion of temporary teachers in Victoria would raise the rate to about 5.6 per cent. Source of rates:

* South Australia, Education Department and Tertiary Education Authority, 1980. p.35.

* Victoria, Planning Services 1980, Table 1.7.3.

* Queensland: data supplied by Department.

* Western Australian Post Secondary Education Commission, 1980. p.4.

in wastage is the reduced opportunity for persons trained as teachers to obtain suitable employment: in teaching or in other occupations. For women, and for male teachers with qualifications in concurrent courses in teacher education, it is likely to be the changes in the teacher market that most affect behaviour: over half the women in the labour force with qualifications in tertiary education (University or CAE) have been employed in teaching. It seems likely that the *expectation* that it would be difficult to re-enter teaching was a major factor in the decline in wastage rates of women teachers. Once that expectation was acted on, and wastage began to fall, the difficulty of re-entry increased in reality, reinforcing expectations.¹³

The impetus to such a change in expectations (and its reverse) is likely to arise from an actual change in difficulty of entry into teaching, together with projections of an impending surplus. The slowing in growth in total teacher demand that became general in 1978 as indicated in Table 2.1 would be a major factor.¹⁴ In South Australia, for example, secondary teachers in government schools increased by 7.1 per cent in 1975, 3.1 per cent in 1976, 0.9 per cent in 1977 and declined slightly in 1978. The wastage rate fell from 8.8 per cent to 4.2 per cent over the period.

At the same time the total Australian output of new graduates expanded very rapidly peaking in 1978 (following the peak in the intakes in 1975)¹⁵ at an estimated 18.4 thousand compared to 16.4 thousand in 1976 and to a total employment of teachers of 179 thousand in 1978, with several States giving preference to beginning teachers in appointments at that time.

While these changes in the "internal" labour market for teachers appear to be sufficient to explain much of the decline in wastage we can also "explain" part of the changes in teacher wastage by changes in the overall level of economic activity and with changes in public service employment.¹⁶ Wastage rates for Victorian teachers are shown in Table 2.6, together with unemployment rates for the civilian labour force. For females the

13. For a discussion see Preston 1980, pp.37-38 which draws on Martin, 1979. If expectations were to improve wastage would begin to rise.

14. For details of annual percentage change by states and school system see Australia, Schools Commission, 1979, pp.112-113.

15. Australia, Education, Training and Employment, 1979, pp.684-685.

16. See, for example, regression analysis in Burke, 1972, pp.139-141.

Table 2.6
Unemployment Rate of the Labour Force and
Wastage Rate of Classified Teachers
 Victoria 1966-79

	<u>Males</u>		<u>Females</u>	
	Unemployment Rate (August)	Wastage Rate (annual)	Unemployment Rate	Wastage Rate
1966	1.0	3.8	1.8	12.2
1967	1.0	3.6	2.3	12.3
1968	1.1	3.9	2.4	12.3
1969	0.8	5.1	2.0	12.0
1970	0.8	4.7	1.5	13.0
1971	1.2	4.9	1.8	13.0
1972	1.9	4.5	3.2	12.3
1973	1.4	4.1	2.5	11.1
1974	1.7	5.8	3.9	11.2
1975	3.5	5.9	6.8	12.1
1976	3.3	4.7	5.7	8.8
1977	3.9	4.0	7.4	7.8
1978	4.7	3.3	7.6	6.4
1979	4.5	3.4	7.2	6.7

Source: ABS *The Labour Force*, Cat. No.6203.0, 6204.0

Victoria, Education Department, *Resignations and Retirements of Classified Teachers* and data supplied from 1976.

Notes: Unemployment rates are for the Victorian labour force aged 15 and over. Wastage includes retirements and resignations. It is expressed as a percentage of teachers employed at 31st March (other dates prior to 1976).

relationship is strong, with about 70 per cent of the variance in wastage "explained" by its relationship with unemployment. For every one percentage point change in the unemployment rate the wastage rate is seen to vary by -0.83 percentage points: in other words if unemployment fell 2.4 points wastage would rise 2 percentage points. For males the relationship is weak, though analysis within a multi-variable model, suitably lagged, may reveal a stronger relationship. Separation of wastage into resignations and retirements (a larger component of male wastage) may also strengthen the apparent relationship.

An indirect effect of unemployment is the general unwillingness of governments to increase total employment of teachers in a period of slack economic activity, and the consequences for expectation of re-entry following resignation.

As noted by Preston (1980, p.37) action to restrict intakes to teacher education, by bringing supply and demand for teachers closer to equality, may improve expectations of re-entry. This may stimulate wastage, particularly among women who have deferred having a family in an uncertain job market. A revival in overall economic activity, of which there are encouraging signs in total civilian employment (Treasury, 1980, p.16) could stimulate resignations, and even ease restrictions on total employment of teachers.

At the same time the teacher labour force is ageing. This will eventually lead to increased rates of retirement. However, in the *eighties* this effect will not be noticeable, as indicated by the relatively small proportion of teachers aged 50 and over shown in Table 2.7.¹⁷ On the other hand while recruitment remains relatively low, the proportion of teachers aged under 30 will be low compared with the mid-seventies. Hence, even quite buoyant economic conditions in the mid-eighties may not stimulate resignations as they would in a younger teacher workforce, (though we do not have relevant data on resignations by age). The change in age structure is very marked in Victoria where, for example, over 60 per cent of teachers classified in the

17. In Victoria a smaller proportion of teachers were aged 50 and over in 1979 than in 1972. Victoria, Planning Services (1980, pp.23-25).

secondary division in 1976 were under 30 compared with about 45 per cent in 1979 (Victoria, Planning Service 1980, p.24).

Another factor that could affect future resignations is the degree of commitment that recently trained teachers have to their occupation. In the past, "bonded" teaching scholarships were seen by some school leavers as a means of acquiring a higher education. Hence resignation at the completion of the bond was high among those whose alternative employment prospects were good, particularly science and economic graduates. It could be hypothesised that recently trained teachers are likely to be more committed and less likely to resign when the economy revives. However data to support the hypothesis is not readily available. Data in Barton (1981) suggests a high level of commitment among (mainly) primary teacher graduates in South Australia but comparisons over time are not available. If there is any effect it is likely to be on resignation by male university trained teachers.

Table 2.7
Age Distribution of Teachers (Percentages)

(a) Primary						
AGE GROUP	NSW (Sept '78)	VIC (1978)	QLD (Dec '79)	SA (Aug '79)	WA (Aug '79)	NT (1979)
MALE						
20-24	15.6	11.9	22.0	26.4	24.5	14.9
25-29	25.7	22.6	20.5	22.0	23.3	27.9
30-34	17.2	20.4	9.2	24.1	15.6	31.1
35-39	13.2	16.7	14.9	12.3	12.2	11.4
40-49	17.7	17.4	13.8	9.2	13.6	10.6
50-59	9.9	10.0	9.1	5.3	9.6	3.8
60+	0.7	1.0	0.5	0.6	1.3	0.3
FEMALE						
20-24	33.6	28.3	38.0	36.7	41.7	29.1
25-29	25.1	33.4	20.1	23.2	19.4	25.2
30-34	10.2	14.2	9.1	12.1	10.0	24.3
35-39	8.3	9.1	12.6	8.8	11.2	9.7
40-49	15.8	10.0	13.3	9.3	13.8	8.5
50-59	6.5	4.4	6.2	8.5	4.1	3.2
60+	0.5	0.6	0.7	1.5	0.7	-

Cont'd. over.

Table 2.7 Cont'd.

AGE GROUP	NSW (Sept '78)	VIC (1978)	QLD (Dec '79)	SA (Aug '79)	WA (Aug '79)	NT (1979)
TOTAL						
20-24	23.0	23.2	32.1	33.7	35.8	24.2
25-29	25.3	30.0	20.2	22.8	20.7	26.1
30-34	12.4	16.2	12.9	15.6	11.9	26.6
35-39	9.8	11.5	13.4	9.8	11.5	10.3
40-49	16.4	12.3	13.5	9.3	13.2	9.2
50-59	7.6	6.1	7.2	7.6	6.0	3.5
60+	0.6	0.7	0.7	1.2	0.9	0.1

(b) Secondary

MALE						
20-24	15.5	7.1	16.7	16.0	15.3	13.0
25-29	30.2	25.3	26.7	33.4	24.4	18.9
30-34	18.8	23.3	21.5	26.2	23.6	35.8
35-39	11.8	15.8	14.5	12.2	13.7	14.9
40-49	14.6	17.3	13.2	7.7	15.4	13.9
50-59	8.5	10.2	7.0	4.1	6.8	3.5
60+	0.6	1.0	0.4	0.4	0.8	-

FEMALE						
20-24	28.1	25.7	39.7	29.2	32.2	20.4
25-29	35.3	40.3	27.2	30.5	24.5	29.9
30-34	11.9	13.3	10.0	14.2	11.2	30.9
35-39	7.6	6.4	9.4	7.9	10.5	11.0
40-49	11.0	8.5	8.8	10.7	15.6	4.7
50-59	5.5	5.4	4.4	6.8	5.5	2.1
60+	0.7	0.7	0.5	0.7	0.4	1.0

TOTAL						
20-24	20.9	14.7	27.4	21.8	22.4	16.6
25-29	32.4	31.5	26.9	32.1	24.4	24.2
30-34	15.8	19.2	16.1	21.0	18.4	33.4
35-39	10.0	12.0	12.2	10.3	12.4	13.0
40-49	13.0	13.7	11.2	9.0	15.5	9.5
50-59	7.2	8.1	5.8	5.4	6.3	2.8
60+	0.6	0.8	0.4	0.5	0.7	0.5

Source: AEC, Statement by State and Territory Education Authorities Regarding Changing Enrolments and Their Effects, 1980.

Note: Age groups for QLD, SA, WA, and NT are 20-25, 26-30, 31-35, 36-40, 41-50, 51-60, and over 60 years.

Females have higher wastage rates than males and their rates have declined more in the late seventies. However, changes in sex composition of the teacher workforce, or differences between states in sex composition, do not appear to offer an explanation of differences in wastage rates between states or movements over time.

2.4 Alternative Scenarios of Size, Structure and Recruitment

The projections of employment used by the TEC (1979, Table 4) showed an annual growth rate about 1 per cent per annum to the mid-eighties and virtually zero thereafter. This compares with rates near to 5 per cent to 1977 and over 2 per cent 1977-79, shown in Table 2.1. With wastage estimated at about 6 per cent (TEC 1979, Table 5), then annual recruits would equal about 7 per cent of total employment or about 12,500 teachers per annum (TEC 1979, Table 8).

If, however, the growth rate were 2 per cent per annum and wastage 8 per cent - not unreasonable suppositions in the light of the discussion of enrolments in Chapter 1, staffing standards in section 2.2, and the state of the economy and its impact on resignation rates in section 2.3 - then total recruits would approach 20,000 per annum and total teacher employment reach 200,000 in 1987.

The immediate impact of increased recruitment might be to stimulate increased intakes to pre-service courses of teacher education which were reduced from 23,600 in 1975 to 16,900 in 1979 and were projected to decline to 13,400 in 1983 (TEC, 1979, Table 9). Available supply of new graduates was projected to fall from 17,500 in 1979 to 11,000 in 1987 (when demand for recruits is estimated at 11,600 by the TEC).

One would not expect pre-service intakes to teacher education to increase by the same proportion as recruitment (roughly 60 per cent) since higher resignations lead to higher availability of experienced teachers ultimately seeking re-entry. In addition, some proportion of the current surplus of teachers may remain available for employment in the mid eighties. To supply 20,000 recruits per annum might require an annual intake of some 18,000 into teacher education generating about 13,000 graduates per annum from

the mid-eighties.¹⁸ This implies 7,000 recruits per annum through re-employment or employment of those previously unable to obtain a teaching position.

Such an increase in intakes to teacher education would have an impact on opportunity for females leaving school for whom employment prospects are still quite bleak. It would stimulate the retention of girls to the end of secondary school (in turn creating a slight increase in demand for teachers) and reverse the sharp downturn in the proportion of students in year 12 who proceed directly from school to college or university (see Karmel, 1980, Table 5). Teaching represented the major destination of girls in Year 12 in the seventies (Burke, 1980). Expansion of intakes would also solve many of the problems of teacher education institutions if programs for rationalisation have not already been implemented.

A higher rate of wastage in the context of growth in total teacher numbers would cause a marked lowering in the average age of the teacher workforce, presuming that recruits are largely from persons in their early twenties. The slowing of recruitment in recent years (and perhaps the increased age of many newly trained recruits) has meant a sharp reduction in the proportion of teachers under 25 years in Victoria, and a marked increase in average salary paid to assistant teachers. Salaries paid to assistant teachers in Victoria in 1980 were 8 per cent higher than they would have been if the 1975 distribution of teachers over salary steps applied.¹⁹

Higher wastage rates also imply greater opportunity for promotion. On past experience wastage is highest among younger teachers, i.e. less than 30 years. Hence, with higher wastage rates a smaller number of a given intake remain to compete for promotion positions. For example, at a 6 per cent annual wastage rate only 54 per cent of a cohort remain after 10 years; at 9 per cent wastage only 39 per cent.

18. Assuming slightly lower rates of survival through training than the TEC.

19. In part, this was due to employment of better qualified staff who commence on a higher step of the salary scale and progress further.

If higher growth rates were accompanied by an equal proportionate increase in promotion positions then promotion prospects would not be diminished; in the short-term for teachers already in service they would be improved.

2.5 Conclusion

Appointments of teachers have not been closely related to changes in enrolments. The major determinants of new jobs have been changes in staffing standards and wastage. Staffing standards are affected by willingness of governments to provide funds and this is related to community and political attitudes and to the overall level of economic activity. Wastage is also affected by the level of economic activity but more directly by the internal labour market for teachers, particularly the expectation of re-entry following resignation.

An apparently small increase in wastage and in the growth rate for teachers can have a major impact on recruitment, on teacher education and on opportunity for school leavers.

A range of personnel problems currently apparent would be lessened if increased recruitment were possible. These problems include incremental creep in salaries, increased long service leave provision and reduced prospects of promotion with effects on morale.

In Chapter 6 we discuss policies affecting resignation rates and vacancies, e.g. long service leave, superannuation and issues related to employment. The need to consider such policies arises if the scenario of growth and wastage follows the lower levels outlined by the TEC rather than the alternative discussed in section 2.4. *Indeed, if the optimistic growth scenario does unfold, spurred on by the resources sector, then the natural resignation of teachers will prevent many of the gloomy considerations from assuming great relevance.*

As the future is uncertain it is important that the speed of adjustment of teacher supply be improved. *One way of speeding adjustment would be to promote end-on graduate diploma courses rather than concurrent*

courses of teacher education. However, this might be resisted on educational grounds and by certain institutions. Alternatively, *efforts could be made to have the fairly general nature of much of teacher education recognised by employers of other occupations and by students enrolling; and to expand the range of subjects included in teacher education.* As an example of the former, in Victoria there is virtually no difference in content between several of the courses in a Rusden B.Ed. or in a Monash undergraduate degree plus Dip.Ed., yet the Monash degree would seem more marketable in the students' and employers' eyes.

If courses became less specific to education, or became recognised as having worth in other forms of employment then any need to restrict teacher education enrolments relative to arts or science or business would be eliminated.

The current period of restriction of intakes to teacher education may not lead to overall shortages of teachers if little improvement in PTR's takes place. But it will probably result in shortages in particular subject areas. In 1980 in Victoria mathematics and physics teachers have no difficulty finding employment. If we can remove quotas and shorten the lead time (e.g. through a one year course of professional training) problems of shortage in specialist areas might be lessened.

The restrictions on intakes to teacher education have been associated with a decline in the quality of the intake to courses as measured, e.g. by HSC scores in Victoria (Victoria, Interim Report 1980, p.513). However, any indication of prolonged improved job prospects in teaching would seem likely to increase demand well beyond current quotas.

CHAPTER 3: CHANGING ENROLMENTS AND COSTS PER STUDENT

3.1 Introduction

It should be clear that in assessing policies with respect to the use of facilities, or policies with respect to personnel and curricula, educational objectives must be set against the overall objectives of economic and social policies. Partly as the result of this all education departments in Australia are experiencing some financial difficulty. They are integral parts of governments which, for varying reasons, are finding it difficult to maintain revenue flows. As a consequence, State Treasuries are arguing for pro rata adjustments in education expenditure.

Some education departments consider that they are being forced to adopt measures which run counter to further progress in education. As the same pressure on education exists within the Commonwealth Budget, in recent years the Schools Commission has been unable to assist in a manner which offsets the pressure applied by State Treasuries.

Before any detailed discussion can take place on policy options that may be available in a world of changing enrolments, it is vital to understand both the forces that are making for increasing costs per student and the magnitude of these costs. While these forces are at their strongest in circumstances of declining enrolments, they are present in all States to varying degrees. Experience may demonstrate that in some situations great disruption occurs in order to achieve what turns out to be minimal cost savings, whereas in other cases the cost savings are considerable and well worth achieving. In responding to financial constraints it will be appropriate to secure those cost savings which do the least damage to educational aims.

3.2 Educational Problems and Smaller Schools

In general terms, the smaller the size of any school, the better the pupil-teacher ratio (PTR) will need to be in order to prevent too great a deterioration in educational provision. At the primary level, as school size decreases it becomes necessary to combine grades and, *inter alia*, the task of

the individual teacher becomes more difficult. At the secondary level, as school size declines it becomes more and more difficult to maintain the range of curricula. The attempt to do so implies a continuous lowering of class sizes.²⁰ In all States and Territories, staffing arrangements are adopted which attempt to give some degree of recognition to these educational problems. However, these arrangements imply a lower PTR as school size falls, and are the fundamental source of the economies of scale that apply in larger schools. Ancillary staff allocations follow the same general pattern, as the normal procedure is to add a variable provision, dependent directly or indirectly on school size, to a fixed provision.

In addition, non-staffing costs are also subject to significant economies of scale, principally because the area of building and of land per student will decline significantly as school size increases. As a consequence, cleaning, fuel, maintenance and other costs per student decline in larger schools. While the main economies in recurrent costs, other than for staff, are achieved relatively quickly, for example by a school size of 200-250 in primary schools, the same is not true of capital costs. Economies of scale in capital costs are significant, probably up to school size of 400-500 in primary schools and 800-1000 in secondary schools. These economies arise because as a school becomes larger, the school's specialist areas (including offices and staff room) decline when assessed on a per student basis. This effect is more significant in a secondary school because of the greater preponderance of specialist areas. While higher capital costs per student are a factor affecting the nature of education departments' building programmes, they are not a problem in departmental recurrent budgets as it is not customary for interest and depreciation charges to be registered. Nevertheless, it will become apparent below that these capital charges are highly relevant from an economic point of view in certain circumstances when school closure is under consideration.

In practice, there are likely to be discontinuities in the relationship between school size and capital cost per student place. For

20. See Appendix B, which sets out a case study of three medium-sized Victorian Secondary Schools experiencing declining enrolments.

example, in a primary school an activity room may become "standard" only at a certain size - say 200 students. Up to that size capital costs per student place will have been declining, then show a sudden jump with further declines as size increases until another threshold is reached. However, when land and buildings are considered together, the overall trend will be for declining costs per student place as school size increases.

Because capital costs are not brought to account in education recurrent budgets, staffing costs (both professional and ancillary) normally represent about 80 per cent of "total" costs (excluding fixed costs). It is on these costs that we now concentrate.

3.3 School Staffing Costs

The staffing arrangements made in all States and Territories vary in terms of their complexity, and of course, in the particular provisions for disadvantaged schools, migrant children, special education etc. However, they all have basic staffing arrangements which ensure that the staffing costs per student decline as school size grows. So long as the special staffing arrangements made for specific purposes do not exhibit a contrary tendency it can be asserted confidently that consideration of the basic staffing formulas will enable a reasonable determination of the order of magnitude of declining costs in larger schools.

It is true that in any particular school the years of experience and the qualifications of teachers employed as assistants will heavily influence the actual salaries paid. For example a country high school is more likely to be staffed by less experienced assistant teachers than a city high school; and a city high school in a lower income area will tend to have less experienced staff than a high school in a more affluent area. Diagram 3.1 illustrates the basic characteristic of a falling average cost curve. However, the diagram is not intended to illustrate the magnitude of declining costs.

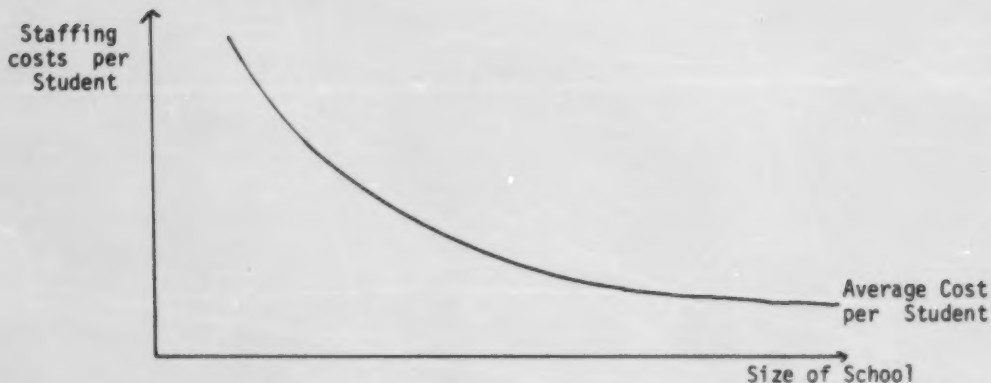


Diagram 3.1

The curve illustrates the characteristics of most formulas, namely that as the size of schools increase, average staffing costs per student fall, but at a declining rate. Ultimately, the curve becomes asymptotic to a line parallel to the horizontal axis. Particular schools may show out at points above or below the curve, depending on special arrangements and on the experience and qualifications (on average) of a school's Assistant Teachers.

It should be noted that the curve declines not only because the staffing formulas adopted provide a higher PTR in larger schools, but also because the weight of salaries for those teachers in promotion positions declines as school size increases. In some States there is a complication in that only full-time teachers are appointed, while in other states teachers can be appointed on a fractional time basis down to one-tenth time. In fact any cost curve will decline in steps, with the steps smaller in those States where fractional time appointments are made and allowed for in the staffing formulas. The smooth-sloping curve depicted in Diagram 3.1 can best be regarded as an envelope of a line showing declining staffing costs per student occurring in steps.

An important characteristic of Diagram 3.1 is that the curve (or an envelope of a stepped relationship between staffing costs per student and school size) is convex to the origin.

Before concluding this section it should be noted that this study has not had the time or resources to analyse fully the nature of cost curves by school size in non-government schools. Data has been difficult to obtain and accordingly we are not in a position to assess how the absence of a rigid formula might affect costs by school size. We are confident, however, that the general thrust of our analysis will not be changed by analysis of private school data, since all systems face common problems regarding "fixed" costs.

3.3.1 Primary Schools

Table 3.1 compares the primary school PTR's in Victoria, S.A. and the A.C.T. applying the relevant staffing formulas, and as indicated above taking no account of staffing arrangements for disadvantaged schools, migrant children, etc. The Victorian formula shows that virtually all economies are achieved at a school size of 250. However, as pointed out above in any translation into costs further economies are achieved because the weight of salaries for those in promotion positions declines as school size increases. For example, Table 3.2 illustrates that as school size increases in S.A. from 250 to 900, the average cost per student declines by 14.9 per cent, while over the same range, the PTR increases by 11.9 per cent. It is true that principals in large schools are normally paid higher salaries, and that at some stage a deputy principal (or even two) will be appointed. However, these factors are only partial offsets to the lessening impact of promotion position salaries as school size increases. It should be noted that the PTR's shown in Table 3.1 and in subsequent tables are those implicit in the staffing formulas. They do not purport to show the actual PTR's applicable to any State system.

Table 3.1
Pupil-Teacher Ratios in Primary Schools^a- 1980

School Enrolment	ACT	Victoria	South Australia
50	b	16.7	20.8
100	b	20.0	21.7
150	b	21.4	21.4
200	b	22.2	22.0
250	20.7	22.7	21.9
300	21.4	23.1	22.6
350	21.9	21.9	22.9
400	21.9	22.2	23.3
450	22.3	22.5	23.4
500	22.5	22.7	23.6
550	22.8	22.9	23.7
600	23.1	23.1	23.8
650	23.4	22.4	24.0
700	23.5	22.6	24.1
750	23.7	22.7	24.3
800	23.8	22.8	24.4
850	24.0	23.0	24.5
900	24.1	23.1	24.5

a Calculated taking into account only the basic staff provision and using the information supplied in the relevant staffing documents

b For schools below 250 in the A.C.T. differing arrangements apply

The staff numbers employed in schools of different size have been translated into costs by using award salaries. These cost figures have then been indexed for the A.C.T. and S.A. in Table 3.2 by assuming that the staffing cost per student for a school of 250 equals 100. Table 3.2 illustrates that both the A.C.T. and S.A. exhibit a similar pattern although as school size grows the reduction in cost per student is greater in the A.C.T. than in S.A.

Table 3.2

Indexes of Staffing Cost per Student in Primary Schools - 1980
Enrolment of 250 = 100

School Enrolment	South Australia	ACT
250	100.0	100.0
300	97.1	94.8
350	94.3	93.1
400	93.0	93.7
450	91.6	91.0
500	91.1	90.2
550	90.1	88.2
600	89.7	86.6
650	88.7	84.9
700	87.8	84.8
750	86.9	83.7
800	86.2	82.8
850	85.5	81.7
900	85.1	81.0

Source: A.C.T. Schools Authority and S.A. Education Department. Indexes have been calculated using the staffing information supplied, and applying salaries applicable in salary awards for mid-1980. For Assistant Teachers, an average salary was assumed approximately two-thirds up the salary scale.

3.3.2 Secondary Schools

Economies of scale are more significant in secondary schools than in primary schools, because there is the additional problem of providing an adequate range of curricula as the size of school declines. Secondary school teachers are not generalists as primary school teachers are assumed to be. Secondary staffing formulas have developed over the years as systematic responses to the curriculum needs of schools. Table 3.3 illustrates the PTR's in Government High Schools in Victoria and South Australia derived from the application of the basic staffing formula in each case and again ignoring the appointment of additional staff to cope with special characteristics. Economies of scale are much greater in secondary schools - for example, from a school size of 250 to one of 900 the pupil-teacher ratio increases by 23.1 per cent in S.A. secondary schools as against 11.9 per cent for primary schools over the same range. In the case of Victoria the increase is 40.4 per cent in high schools as against 1.8 per cent in primary schools. Table 3.2 indicates greater economies due to size in Victorian High Schools than in S.A. It should be noted that, for Victoria, the continuation of the Table much beyond

a school size of 1,000 is partly theoretical, as only 4 Victorian Secondary schools had an enrolment in excess of 1,000 in 1979.

Once the translation into costs is made, the extent of economies of scale implicit in the staffing formulas is very similar over certain ranges, because the appointment of additional Deputy Principals and Seniors acts as an offset to the otherwise declining weight of promotion position salaries. However, in South Australia declines in costs are more significant than the equivalent increase in the PTR up to a size of 450 when a S.A. high school becomes entitled to a second Deputy, and beyond 1400 by which size a school has its full quota of Deputies and Seniors.

Table 3.3
Pupil-Teacher Ratios in Government High Schools - 1980

School Enrolment	Victoria	South Australia
100	8.5	10.0
150	11.1	10.9
200	10.8	11.3
250	10.9	11.7
300	11.5	12.0
350	12.5	12.2
400	12.9	12.5
450	13.2	12.8
500	13.5	12.9
550	14.1	13.1
600	14.3	13.3
650	14.4	13.5
700	14.6	13.7
750	14.7	13.9
800	15.1	14.0
850	15.2	14.2
900	15.3	14.4
950	15.3	14.4
1000	15.6	14.5
1100	15.7	14.7
1200	15.8	14.9
1300	16.0	15.0
1400	16.1	15.2
1500	16.3	15.3
1600	16.3	15.4
1700	16.5	15.5
1800	16.5	15.5

Source: S.A. and Victorian Education Department documents for 1980.

Table 3.4 sets out an index of staffing costs per student for S.A. Secondary Schools. Because of the effect discussed above, the discrepancy between primary and secondary schools is not as great in terms of costs as in terms of PTR's. From a school size of 250 to a size of 900 in S.A. the increase in the PTR's is 11.9 per cent in primary schools and 23.1 per cent in secondary schools, while over the same range the decrease in cost per student is 14.9 per cent in primary schools and 22.6 per cent in secondary schools.

Table 3.4

Index of Staffing Cost in SA Government Secondary Schools - 1980
Enrolment of 250 = 100

School Enrolment	Index	School Enrolment	Index
100	126.4	800	79.5
150	111.3	850	78.2
200	104.3	900	77.4
250	100.0	950	76.7
300	96.2	1000	76.0
350	93.6	1100	74.7
400	91.0	1200	73.6
450	88.7	1300	72.9
500	87.1	1400	72.2
550	85.8	1500	71.2
600	84.2	1600	70.4
650	82.9	1700	69.8
700	82.0	1800	69.3
750	80.4		

Source: S.A. Staffing document and Teachers Salaries Board Award.

3.4 *Changing Enrolments, School Size and Costs*

Within an urban area, even if total enrolments are increasing, there are normally substantial changes in the pattern of enrolments. These changes largely follow the pattern of growth of Australian cities, particularly in the years following the second world-war. An important part of this pattern of growth was the extension of home-ownership into lower relative income levels than had been the case in the 1930's with movements into the fringe of urban areas in Australia away from inner suburbia. In addition, because most of the low-cost housing finance was only available for newly-built homes, new homes on the fringes of urban area were predominantly for families with young children. Every new housing estate on the urban fringe experienced an

immediate bulge in primary enrolments. The expansion in enrolments on the urban fringe exceeded the net total growth. During a period of rapid expansion in any urban area, the local education authority would be faced with a need for new primary schools, followed within a few years by a requirement for new secondary schools. The pressure on school building programmes in most urban areas was such that the programme soon lagged behind. Furthermore, all authorities faced the problem that because of the nature of urban development the peak enrolment in any school, primary or secondary, was likely to be up to double the likely longer-term enrolment.²¹ Even when, in urban areas, the rate of overall growth slowed down, or became negative, there was often continued growth of enrolments on the urban fringe.

Because of declining birth rates, and lower migration rates, the years of very rapid growth have now disappeared in most of our urban areas. However, as school building programmes catch up we are still experiencing an increase in the number of schools and because of the ever-changing pattern of enrolments, very significant variations in the average size of schools within portions of a larger urban area. While Australia's recent history has been one of dramatic changes in school size, there are sound reasons for expecting further dramatic change in the 1980s. Outside certain growth nodes, such as the Hunter Valley in N.S.W., Portland in Victoria or Gladstone in Queensland, most urban areas in Australia, even Brisbane and Perth, will display significant reductions in the average size of schools. These reductions will be a consequence of both enrolment change and an increased number of schools. Even if urban enrolments show a small net increase, the redistribution of those enrolments is likely to be associated with a compensating larger increase in the number of schools. While in the latter part of this decade there may be some reversion back to inner-suburban living, there is still potential for further decline in inner suburban schools and more particularly in those schools which once serviced a fringe area, but now because of further growth, are partly inner-suburban in character.

21. The relationship between peak enrolment and "longer-term" enrolment is governed by the speed of development and the opening of neighbouring schools which siphon off some of the excess enrolments.

The question of how best to manage education facilities in an urban area will remain an important and difficult exercise. Before examining these issues, it is as well to gain a firm idea of the order of magnitude of the changes in the pattern of urban enrolments in selected urban areas, and the cost consequences of those changes. We turn to the latter problem first.

An average cost curve such as that depicted in Diagram 3.1 will have a marginal cost curve associated with it. This is shown in Diagram 3.2.

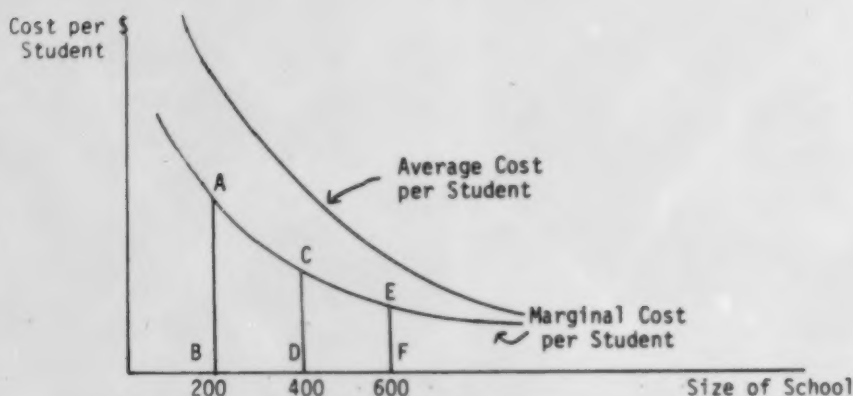


Diagram 3.2

Over the relevant range the marginal cost curve will be downward sloping and convex to the origin (although there may be some discontinuities at points at which the formula allows additional personnel - e.g. vice principals). The downward slope enables us very simply to demonstrate that *greater dispersion in the size of schools will be a factor reducing overall costs per student*. Consider a situation, where instead of 2 schools - one of 200 and the other of 600 - it is proposed to equalise enrolments in both schools at 400 by means of transfer of 200 students. It is assumed that the appropriate staffing formula applies. At any point on a marginal cost curve the area under the curve measures total variable cost. In moving from a school of 200 to 400, the additional cost is the area ABDC, while in moving from a school of 600 to one of 400, the area CDFE represents the reduction in cost. Clearly, the increase

(ABDC) in cost is greater than the saving (CDFE). The move to equalise enrolments has increased average cost per student and therefore total costs. Furthermore this will always be the case so long as the marginal cost of additional students declines as the size of school increases, i.e. so long as the marginal cost curve slopes downwards.

It is possible to use the indexes provided for S.A. secondary schools in Table 3.4 to gain some idea of the order of magnitude of changes in cost per student. For example, the case illustrated in Diagram 3.2 would raise costs per student by 2 per cent. Where the changes in school size are greater, the effect is more significant. If two schools each with 500 enrolments replaced a school of 100 students and a school of 900 students then cost per student would rise nearly 6 per cent.

A second proposition derives directly from the staffing formulas; namely, *any change (a decrease in enrolments or an increase in the number of schools) which leads to a reduction in the average size of schools will raise average costs per student.*

As is shown by the examples set out in Appendix A, the distribution of school sizes in an urban area can vary significantly from time to time. If the distribution becomes more dispersed about the mean, then average costs per student will fall. In the examples it is usual for the distribution to become more positively skewed (or less negatively skewed) when dispersion increases. Positive skewness may be indicated by a cluster of schools below mean size and a significant number of large to very large schools.

In summary, the cost per student over a group of schools is affected by the mean size of schools and the distribution of schools in a number of ways. Cost per student over all schools will rise if:

- (a) there is reduced dispersion in school size around the mean (or average);
- (b) there is a reduction in the average size of schools.

Appendix A sets out, for the decade of the seventies, examples of changes in the numbers and size of schools for Adelaide and Brisbane secondary schools, and for Canberra and Hobart primary schools. In each case statistical measures of dispersion and skewness are calculated, as well as variations in average size.

The reader is referred to the Appendix for full details. However, certain features of the analysis need to be noted.

Decline in the average size of schools is variously related to enrolment changes. In Adelaide, from 1971 to 1980, a 0.8 per cent increase in secondary enrolments was associated with a 5.6 per cent decline in average school size, while from 1976 to 1980, a 7.4 per cent decline in enrolments was associated with a 5.9 per cent decline in average school size. On the other hand Brisbane secondary enrolments, from 1971 to 1980, increased by 19.1 per cent while school size declined by 2.8 per cent. However, in the sub-period, 1975 to 1980, an increase of 2.4 per cent in enrolments was associated with a 10.2 per cent decline in the average size of school. In the A.C.T. from 1971 to 1980, primary school enrolments rose by 38.5 per cent and school size declined by 21.8 per cent, while in Hobart, from 1970 to 1980, a similar decline in the average size of primary schools (20.4 per cent) was associated with a 5.4 per cent decline in enrolments.

There are a number of examples of dispersion offsetting, or reinforcing, the effect of change in school size on the average cost of schools. The most extreme case occurs in the A.C.T., where much slower growth in the latter half of the seventies, following on the helter-skelter pace of growth in the early part of the decade, produced over the whole decade a dramatic reduction in the average size of schools, reduced dispersion and reduced positive skewness. Costs per student rose by 4.2 per cent simply as a consequence of reduced school size. Allowing for the reinforcement from reduced dispersion the increase in costs per student would be of the order of 6 to 7 per cent - a most significant departure from any pro rata movement of costs and enrolments.

It is also worth noting that the introduction of dezoning in Adelaide in 1980 increased dispersion and eliminated a negative skewness

apparent in 1979, and almost offset completely the effect on costs per student of a 4 per cent reduction in the average size of school. Also of significance to other systems is the impact of amalgamation of secondary schools in Adelaide on costs through offsetting what would otherwise have been a very large reduction in the average size of schools.

It is also possible to ascertain some idea of the order of magnitude of cost changes in response to changes in the average size of schools. The best approximation is that, ignoring dispersion, any decline in the average size of schools will raise costs per student by a percentage equal to one-fifth of the percentage decline in size of primary schools and one-quarter of the percentage decline in size of secondary schools. For example, a 20 per cent decline in school size will raise costs per student by 4 per cent in primary schools and 5 per cent in secondary schools. Changes in dispersion may reinforce or offset these changes.

CHAPTER 4: FACILITIES MANAGEMENT, CLOSURE, AND COSTS

4.1 Introduction

The information provided in Chapter 3 and Appendix A, while not complete, nevertheless supports certain very clear conclusions. First, even apart from extra costs of transport, costs per student will be adversely affected by policies which aim to even out surplus capacity over a number of schools. Costs are favourably affected by allowing increased dispersion to occur - indeed the ultimate closure and/or amalgamation of schools implies simply extending dispersion downwards to its feasible limit.

4.2 Cost Savings with Amalgamation

There are, of course, other options to closure or amalgamation and they are considered in Chapter 5. However, at this stage it is convenient to assess the order of magnitude of cost savings that can arise from policies involving say amalgamation of two schools. Let us assume it is proposed to amalgamate two schools of 500 students into one school of 1,000 students, applying the 1980 S.A. secondary staffing arrangements. Table 4.1 sets out the staff allocations and the potential savings.

Table 4.1
Staff Saving from Amalgamation - S.A. 1980

Staff Allocated to 2 Schools of 500 each	Staff Allocated to 1 School of 1000	Potential Staff Saving
2 Principals	1 Principal	1 Principal
4 Deputies	3 Deputies	1 Deputy
14 Seniors	12 Seniors	2 Seniors
57.4 Assistants	52.8 Assistants	4.6 Assistants
15.6 Ancillary Staff	11.8 Ancillary Staff	3.8 Ancillary Staff

At current rates the potential salary saving is approximately \$192,000 per annum. In the States, if fixed costs are ignored, salary and wage costs represent between 78 and 85 per cent of total costs. If salary costs are 85 per cent of the total, the potential saving in other costs would be approximately \$34,000 per annum, while if salary costs are only 80 per cent of the total, the potential saving in other costs would be approximately

\$48,000 per annum. The total potential saving in cost would be between \$225,000 and \$240,000 per annum, or spread over the 1,000 students involved in the amalgamation between \$225 and \$240 per student per annum. If the closed school property can be sold, or leased commercially and the funds used to assist the education budget without adverse impact on other funding there may be a further saving, considered from an Education Department standpoint, which could be very large indeed.

The latter potential saving is highly variable and dependent on a number of factors, but principally on the alternative uses of the land and buildings. If the school in question is located within a residential neighbourhood, it could be presumably sold for housing at values up to say \$125,000 a hectare in a city such as Sydney but at much smaller values in a smaller city. An eight hectare property might have a value for housing from \$400,000 to \$1,000,000. If sold and with the bond rate at 12 per cent the benefit to the recurrent budget is from \$48,000 to \$120,000 per annum. However, such a potential saving presumes that sale is politically practicable and that the property is not likely to be required for school purposes in the future. While, in principle, education departments have the power to acquire compulsorily housing for the purpose of establishing a school, such a procedure is difficult normally and would raise a tremendous outcry where the acquisition was of houses built on land that was school land a decade or two earlier.

Leasing unrequired school property in a residential area for other than educational purposes may run counter to zoning requirements, and in any event will not be very attractive commercially. However, it may be possible to shift, for example, an education regional office out of rented premises and thus avoid certain rental payments. In any event, a leasing arrangement to a non-education user will allow maintenance costs to be avoided and presumably would help to limit vandalism.

The potential for sale may be very different if the property can be rezoned for commercial or industrial purposes. In certain circumstances the gain, say in a large city like Sydney or Melbourne, may be as much as \$4 to \$5 million. If the school is already located in an industrial area for example,

and if the time for closure arises in part because the houses that once serviced the school have been sold off and the area redeveloped, then one may be confident that sale will not create an outcry. Further, in those cases in which there is little possibility of the property ever being required in the future for school purposes, the potential gain is very large - on an equivalent annual basis approximating \$500,000 p.a. - and will exceed significantly any other saving that can be made.

4.3 The Realisation of Potential Savings

A crucial question will always be whether or not the potential saving - salary or other - can in fact be realised. If industrial relations policies do not permit retrenchment of staff, then in a situation of declining enrolments salary savings can only be made as wastage occurs. While this may be relatively straightforward in the case of Assistant Teachers, if wastage rates have declined for other reasons, the salary savings will be at the cost of fewer students from teacher training institutions gaining new positions. In one sense the pressure for adjustment is passed on to those institutions.

The wastage rate of staff in promotion positions is normally significantly lower than among assistant teachers, particularly if the age distribution of people in those positions is biased heavily towards people in the age-group 30-50. If wastage rates are very low, as they have been in the last few years, then the wastage rate of staff in promotion positions may be negligible. Indeed, if enrolments are declining, there may already be excess Deputies and Seniors within the system. As a consequence, in the example given, a significant portion of the salary savings may not be available immediately. Deputies may be persuaded to work as Seniors if they retain their status and salary and a guarantee to be given the first available deputy principal position. Similarly, Seniors may be persuaded to work as Assistants. In any event, whether or not there is sufficient wastage among promotion positions to permit the full savings, the industrial cost of this aspect of school closure will be to slow down further promotion out of assistant ranks into senior positions.

It is worth noting that the process of promotion has already slowed down drastically throughout Australia as a consequence of declining growth of

enrolments (or even absolute decline), and the dramatic reduction in resignation rates at all levels. Once school closure and amalgamation is seen as a force which will exacerbate further the promotion process, industrial relations situations will develop which will make closure of schools more difficult. The automatic reaction will be to negotiate for better staffing arrangements in the amalgamated schools. Parental support will be gained readily for such an approach. To the extent that education authorities have to give way to this pressure in order to obtain a successful amalgamation, potential salary savings will be eroded.

School closure in a residential area is likely to lead to substantial community pressure to retain the school buildings and playing fields for community use. While some maintenance costs may be assumed by the community, if the pressure is successful, any profitable leasing or selling opportunities will have been lost.

4.4 Government Procedures

The above discussion has been carried out on the assumption that the gains from leasing or sale can accrue to the education authority without affecting adversely the normal budgetary arrangements. Because of the normal rules of State Treasuries, this assumption is incorrect. As a consequence, there is no inducement for education departments and authorities to consider rational economic choices related to the sale or lease of any part of the land or buildings that are in their control. The only effective inducement occurs where it is possible to minimise the renting of private premises by making use of surplus school capacity for educational administrative purposes. Where TAFE activities are part of the education authority function there is a further alternative, particularly in those areas where TAFE facilities are inadequate, and, in the absence of alternatives, would be expanded. Even where Further Education is a separate department, the joint use of facilities or the passing over of whole properties still makes sense, if it allows non-salary savings to be realised, and particularly where a short-term arrangement can be achieved which protects against a projected future increase in school enrolments.

There is a need also to consider the requirements of other government or semi-government authorities which provide valued services to a local community. Health, community welfare and other departments could well make use of surplus school facilities. Such an approach will require firm directions to be issued by Cabinet in each State in order to overcome the "bailiwick" syndrome - that is the desire of each department to have its own corner or "bailiwick", free from any hindrance or interference from other government departments. A system of government which enables departments and ministers to pursue their own concerns, and minimise co-operation with others is not conducive to making effective use of the government's (and therefore the community's) capital facilities.

4.6 Closure and Consensus

The increasing demand for local participation in decision making, and the increasing desire for "consensus" before "action", is another factor which will tend to make policies involving amalgamation or closure of schools less effective. First, participation policies and requirements for consensus tend to delay appropriate decisions. Secondly, when the decisions are finally made they tend to be less cost-effective as pressure groups are "bought off" by concessions which eliminate some of the potential savings. The emphasis on participatory democracy in the modern world is not conducive towards cost-effective decisions - nor indeed is it intended to be by those who insist on participation. "Participation" is often used as a fundamental weapon of conservatism, particularly by those who might regard themselves, or might be regarded by others, as extremely radical on other issues.

Despite the difficulties of closure and amalgamation alluded to above, there are a number of examples of effective changes that have occurred within the education systems of Australia. For example, secondary, or matriculation, colleges have been established in Tasmania and the A.C.T., and in the process certain high schools have been closed or amalgamated, or more usually converted into a matriculation college. Again, in a number of States, Area or District schools have been established by closure of small primary schools and the bussing of children to a central location. This latter process is designed to bring together enough students to justify the

commencement of secondary classes. Furthermore for educational reasons and for economy in the use of teachers in a period of teacher shortage, small primary schools (usually one teacher) have been closed in a number of States, and the children bussed to a larger primary school.

In addition, as illustrated in Appendix A, a number of single-sex schools have been amalgamated as a move towards co-education and comprehensiveness.

Many of the above changes took place with the absolute minimum of difficulty and opposition from those involved in, or affected by, the changes. However, it must be recognised that each of the above examples involved achievement of educational objectives. And in the majority of cases, parents, teachers and children would have perceived the change in educational terms. While that is often not the case with the closure of one-teacher schools, the decision-maker was normally buttressed by the knowledge that majority opposition would shortly turn into majority support once the children experienced the impact of the larger school.

However, closure of a neighbourhood primary or secondary school, purely on grounds of cost, is another matter entirely. Once the purely economic objective is perceived within the local community, opposition will become intensified, and the ordinary processes of a democratic community will be used either to frustrate the pending decision, or to change it in ways which affect most of the planned financial benefits. This will be most evident where closure is perceived by teacher organisations as a means of reducing the number of promotion positions, and therefore the future promotion opportunities of teachers. It is probably the case that effective personnel policies that seem to benefit teachers are a necessary adjunct if policy options on facilities are to be exercised effectively.

Whatever the political difficulties of closure, there will be some point at which, within any system, the decision can no longer be deferred. That "point of no return" where a decision to close, once made, will be adhered to in all circumstances, cannot be precisely defined. It will vary from community to community and will depend on, *inter alia*, the extent of community participation in decision-making and the extent to which decisions taken by those in authority are accepted rather than disputed.

There is, presumably, a size below which any school should be closed on educational grounds. While it is not possible to determine that size with any degree of precision because of the conflicting educational arguments for and against small schools, it is safe to conclude that it will be significantly larger than the size which is acceptable politically within a democratic community.

It is not possible to lay down procedures that are designed to facilitate closure when that is justified on educational and economic grounds. Well understood procedures may help establish the view that a decision to close a particular school was undertaken fairly, but they are unlikely to facilitate significantly the actual decision, simply because these procedures are designed to define the manner in which consultation and participation are to take place. The more the processes of consultation and participation are formalised, the more difficult the ultimate decision to close a particular school will become.

However, there are policy options which enable some progress to be made without actually involving closure. These are discussed in some detail in Chapter 5. It remains here to consider the concept of partial closure. Partial closure of a school does not avoid the educational disadvantages of a small school. However, it will enable the release of some of the school's facilities to other uses, and thus economise on the non-salary costs of small schools. Because the school must continue to co-exist with other users of the same facilities, there will be serious limitations placed on the range of alternative uses that is feasible. Most acceptable alternatives involve an activity that is in the nature of a community service, most probably in the educational, health or welfare areas. However, most education authorities will have options for use entailing administrative functions, or in-service, advisory and curriculum services. Occasionally, it will be possible to provide an educational use, e.g. a special migrant education facility or a reading development centre, which can assist with the educational problems of the school occupying the same facilities.

From the examples given in Appendix A it appears that reductions in the average size of schools will raise average cost per student by as much as

one-quarter to one-fifth of the percentage reduction in the size of schools. The actual percentage increase in costs per student will also be affected by the degree of dispersion in school size and the extent of skewness in the distribution of school sizes. As growth rates in urban areas slow down and subsequently decline there may well develop a tendency for dispersion to decline, and negative skewness to dominate - or at least for any positive skewness to be reduced. As a consequence the nineteen-eighties may well see a bigger impact on costs per student as school sizes decline.

Because there will continue to be a tendency for new schools to be built in the outer suburbs of an urban area, the overall enrolment projections are fully consistent with reductions in the average size of schools of 20 per cent or more. The best guess, therefore, of the order of magnitude of the cost inefficiency from this source during the nineteen-eighties would involve a cost penalty of some 5 per cent.

4.6 Incremental Creep

Slower rates of growth of enrolments and declining enrolments when coupled with declining resignation rates of teachers, gives rise to another source of increasing cost which is best described as "incremental creep" - the tendency for the average salary of assistant teachers to rise over time. The factors responsible for incremental creep are as follows:

- (a) Lower rates of promotion into senior ranks. The rate of promotion is governed by a complex of factors, namely:
 - (i) the age distribution of those already in promotion positions, and consequential retirement rates;
 - (ii) the rate of growth of enrolments and the growth in the number of schools;
 - (iii) the rate of resignation of those in promotion positions;
 - (iv) departmental policies which may change the basis on which promotion positions are provided; and
 - (v) rates of promotion from senior school positions into departmental administrative positions.
- (b) Lower rates of resignation among assistant teachers;
- (c) Improvements in the qualifications (on average) of those appointed as assistant teachers;

- (d) Improvements in qualifications of existing assistant teachers enabling them to overcome the salary bars that exists in salary scales; and
- (e) Policies adopted towards the appointment of new teachers e.g. to what extent is reliance placed on exit students from college, as against those who were previously employed in the department or who have had experience elsewhere. This factor is significant if credit is given for previous experience.

The combination of circumstances that have existed in Australia since the mid-seventies have exaggerated significantly the extent of positive incremental creep, particularly as it followed on a period of rapid growth in enrolments. That earlier rapid growth, coupled with increased numbers of schools and rapid promotion, produced in all education systems significant bias in the age distribution of people in promotion positions towards those in the younger age groups. In turn the high resignation rate among assistants up until the mid-seventies, coupled with a larger than normal proportion of assistants with minimal qualifications, provided a lower-than-normal bias, increasing significantly the extent to which average salaries could grow.

Since the mid-seventies the decline in enrolment growth, and in some cases a reversion to absolute decline in enrolments, together with the dramatic reduction in resignation rates and the increase in the qualifications of newly-appointed teachers, have no doubt raised average assistant salaries significantly. The figures now available suggest that incremental creep is significant. In Queensland the average salary paid to assistant teachers over and above award increases rose by 6.4 per cent from November, 1976 to February, 1980. For Victoria, over a similar period, the increase was 8.4 per cent. These estimates of "incremental creep" are consistent with the expectation that the forces producing this result will be weaker in those States experiencing higher rates of enrolment growth. It would be sensible for each State to keep estimates of average assistant salaries. Such estimates can be obtained reasonably reliably from relatively small samples. However, computerisation of salary records may allow a precise figure to be calculated. There is little doubt that the growth in average assistant

salaries has been a major source of difficulty for education departments keeping within budget allocations. It is also a major source of lower standards if Governments insist on there being a straight-line connection between enrolments and budget allocations.

If current conditions persist for a period of years, then presumably average assistant salaries will reach a maximum, a point where further creep is minimal. Once this position is achieved, and it may not be too far off in the case of South Australia and Tasmania, any increase in resignation or retirement rates will produce a benefit to departmental budgets. Another reason for departments endeavouring to estimate average assistant salaries is that it would be useful to be able to predict accurately when a cost saving was achievable. With budgets under pressure it is not good practice to achieve an unexpected saving at the end of a financial year. To turn that unexpected saving into a predicted "potential" saving might give additional flexibility in educational management.

While it is probable, basing one's judgement on the Queensland and Victorian estimates, that incremental creep has a much greater impact on cost per student than variations in the size distribution of schools, there is only a limited impact that policies can have on the former. However, it is true that personnel policies directed towards early retirement will tend to moderate the extent of the incremental creep. After promotions have occurred, an early retirement will replace an assistant at the top of the salary range (now promoted) by an assistant at a much lower salary. This matter is taken up again in Chapter 6.

CHAPTER 5: MANAGEMENT OPTIONS WITH RESPECT TO FACILITIES

5.1 Introduction

As we have already noted, the changing pattern of urban enrolments and the building of new schools on the urban fringe creates surplus capacity in numerous schools in the inner suburbs, and also in those "inner" suburbs which were part of the urban fringe in previous decades and where a wave of growth has passed through the education system leaving in its wake enrolments barely half the peak level.

The "under-utilised" schools in most inner urban areas pose a particular problem, although part of the "under-utilisation" has been taken up by: (a) the removal of temporary buildings provided to service the peak; (b) a significant reduction in class sizes over the previous 15 years; and (c) a startling capacity of most schools to make some use of whatever facilities are available to them.

5.2 Primary Schools

At the primary level it might be argued that most economies of scale (other than interest and depreciation costs) in relation to resources other than staffing are achieved at a school size of 250.²² Certainly, a reasonable part of staffing economies are achieved by a primary school of that size, although reductions of up to 15 per cent in staffing costs per student as the school size expands towards 1,000 are not to be ignored. At the primary level, most management options turn on the question whether or not to close the school; or alternatively to maintain only a small school (see section 4.5) and use the remaining space for some specialist purpose. In the inner suburban schools, many are classified as disadvantaged because of the socio-economic status of the area they serve, and a number have special arrangements because of the prevalence of migrant children. Furthermore, an attempt at closure may result in pleas from local government authorities that closure would defeat attempts to attract families back to such suburbs. In addition, at this stage if the surrounding area has remained primarily residential it is

22. K. Curtis, *Study of Costs per Student in S.A. Primary Schools*, S.A. Education Department.

too early to determine the impact which higher petrol prices (particularly in the longer-term) will have on the attractiveness of inner-suburban living over the next decade. Certainly, if the school is not to be sold, once closed, the gains from closure and use of the property for some other temporary purpose will not be as great.

With very young primary children there will always be a local argument in favour of retention of a school that is within safe walking distance of the home. The local parents committee and others involved with the school may become a very powerful lobby for retention.

"Efficiency" in the crude economic sense will always suggest closure and consolidation of schools, so long as the potential savings can be realised, and the school property converted to some other economic use. This argument only dominates other considerations when the area served by a school through redevelopment ceases to be predominantly residential and becomes instead predominantly commercial or industrial. It is in these circumstances that the school property has the greatest value in other uses. It is recommended that Education Authorities should take up with their respective governments that where school property is sold, the gain from sale should be an accrual to the Education Budget, without any offsetting adjustment from other revenue sources. The sum obtained could be treated as a supplement to the Education Authority's normal building programme. There would be a long-term gain to the State Budget in securing a more efficient use of education facilities, and in reducing the maintenance requirements on Public Works Departments. Over the longer term, of course, governments would still have the capacity to adjust budgets in light of any windfall gains.

Where closure is to take place the location of an alternative school is an important consideration. Closure carries with it the private and social costs of transporting the children concerned to an alternative school. Some part of this social cost may be met by education authorities, depending on the distance involved and the particular transport policies that apply. However, from the overall community point of view the social cost, whoever pays, is an offset to any other gains arising from the school closure. Certainly, if some hundreds of children have to be bussed to a new location each day, the offset

may be substantial. In an example given in the previous chapter, potential salary savings up to \$240,000 per annum could be achieved by amalgamating two secondary schools of 500 students each, i.e. up to \$240 per student per annum. Additional transport costs would need to exceed \$6 per week on average for all students to offset fully these savings. In all probability additional transport costs would only be incurred for up to 500 students (half the total number) and would be most unlikely to be more than one-third of the prospective savings. For primary schools, the potential savings from closure (or amalgamation) would be substantially less, because economies of scale are significantly smaller. On the other hand, the alternative primary school would be closer and the offsetting transport costs substantially less as well. The fact that not all potential savings may be achieved, and that there are offsetting transport costs, emphasises that closure and/or amalgamation may be a marginal decision economically. This, in turn underlines the point made in Chapter 4 that the alternative use, including possible sale, of the facilities released by closure or amalgamation may be critical in the ultimate decision, when that decision is made from a purely economic point of view.

These considerations suggest that if enrolments are falling in a primary school below a critical level, it is folly to maintain a policy of zoning. In those educational authorities where zoning of primary schools still applies, it is *recommended* that before any school is closed, at least that school and potential receiving schools should be dezoned. Such an approach may clarify the situation considerably and reduce numbers to the extent where closure becomes a more acceptable alternative.

5.3 Secondary School Facilities

The management of secondary facilities is a much more complicated matter, firstly because the diseconomies of under-utilisation are greater, and secondly because policy options available are more varied.

5.4 Secondary Colleges

In a system in which secondary enrolments are declining, and the average school size falling dramatically, some consideration should perhaps be given to the question of the establishment of secondary colleges or senior

high schools²³. In theory it may be possible to convert one out of every 4 or 5 high schools to a secondary college to cover the last two years of secondary schooling. For example, five high schools with enrolments averaging 600 may enable a secondary college of 600 to 800 to be established while the remaining junior high schools are left with approximately 550 to 600 students each to cover the first 3 or 4 years of secondary schooling. The economic justification would be that a secondary college of 600 to 800 students could be run more efficiently with a wider curricula than 5 separate schools providing courses for year 11 and 12 students.

There are significant educational arguments for and against such an approach. It is not the function of this report to make judgements on these educational arguments, except to point out the very clear danger that the establishment of separate secondary colleges may run the risk of reducing retention into the senior secondary years. In a regime of declining enrolments any reduction in retention would exacerbate one of the basic problems, namely the consequential need to reduce personnel. In this connection it should be noted that retention into Years 11 and 12 is significantly less in Tasmania than on the mainland, and this may be a consequence of the break in schooling imposed by the matriculation college system in that State.²⁴ On the other hand, the Tasmanian experience was not repeated in the Australian Capital Territory. It is suggested that few Australian State authorities would be willing to rely on the A.C.T. evidence, and would more properly be guided by the Tasmanian situation.

The theoretical justification for the establishment of secondary colleges, namely that it would permit a greater rate of elimination of small classes in both the secondary college and in the remaining junior high schools, may turn out to be difficult to achieve in practice. For example,

23. See also Appendix B where a detailed exercise is carried out.

24. The Tasmanian Education Department has commented that the retention ratios in Tasmania were lower than in other states before these colleges were introduced. They also draw attention to the amalgamation taking place of upper secondary and TAFE, which they think will affect retention.

while 25 students may desire to study French in each of the two years of schooling covered by the College, two such classes would not be sufficient to occupy fully the capacity of one French teacher. A fractional time appointment, if permitted by the system, may meet the needs of the college. Alternatively, the French teacher may have to be appointed to more than one school or college to match up the capacity of the teacher with the lesson requirements of students. This problem would almost certainly recur in other subject areas, particularly if the establishment of colleges were associated with an attempt to maximise subject choice available to students.

In principle, the same problem could be experienced in the remaining Junior High Schools particularly where only Years 8, 9 and 10 were incorporated, i.e. in those systems with seven primary grades. In any event teacher opposition to such a change could well be greater in a system where enrolments were declining, because the establishment of senior colleges might well be seen as further restricting promotional opportunities for a large number of teachers.

As a matter of practical reality, the staffing arrangements for secondary colleges in the A.C.T. and Tasmania are not less generous than in the junior high schools - they tend to involve instead a more generous staffing formula. It is probably necessary to argue that because the junior high schools and the secondary colleges cover fewer years of schooling than the high schools which were replaced, they can each be staffed with a less generous formula and a staffing economy achieved in that manner. However, could the support of teacher organisations be obtained if less generous staffing arrangements for both junior high schools and the secondary colleges were a necessary pre-requisite?

The establishment of secondary colleges would cut across the development of special interest secondary schools in subjects such as music, ballet and languages. Whereas a special interest school seeks to foster talent in areas where younger students have some special learning facility, a further division of schooling between years 10 and 11 would restrict the ability of the special interest school to set high standards for newer students to aim to achieve. Indeed, there would need to be duplication of the special interest school within the secondary college, further complicating staffing arrangements.

In Chapter 3 it has been emphasised that a regime of declining enrolments does not occur evenly across an urban area. In those sections of an urban area where significant surplus capacity existed in the majority of schools, secondary colleges could probably be established without the necessity for any significant expenditure on buildings. However, on the urban fringe where secondary schools are still growing, some secondary colleges would have to be built, if a movement towards a system of secondary colleges were to apply across the system rather than locally. If a school is built as a specialist secondary college, the tightest administrative controls are unlikely to prevent exuberance by the school planners and the architects. Where specialist secondary colleges have been built in Tasmania and the A.C.T. the capital cost per student has been significantly greater than in the ordinary high school. Over-exuberance in building design and the syndrome of leaving monuments to posterity are extraordinarily difficult to prevent.

In all systems, the establishment of secondary colleges will involve costs of additional transportation, and depending on the particular systemic arrangements there will also be additional departmental transport costs. In some cases, e.g. N.S.W., the transport costs to be met by the Education Authority will be high.

The above arguments are designed to suggest, *not* that there are no significant educational advantages to be achieved by the establishment of secondary colleges, but rather that to achieve full educational effectiveness and the co-operation of teachers by such an arrangement, resource use (and therefore costs) per student may need to be increased. This is particularly the case in a regime of declining enrolments, not just because of the attitudes of teachers, but also because there is a very real danger that the secondary colleges will be seen by many in the community as matriculation colleges rather than advanced comprehensive schools. If that is the perception, retention rates may decline and enrolments decline still further. This perception could be avoided if the secondary colleges were linked in physically with TAFE colleges - such a linkage would however require new buildings and leave the old high schools even more underutilised.

It is *recommended* that should any system contemplate the establishment of secondary colleges, a working party, with teacher union representation, be established to consider and report on the detailed arrangements that would be necessary. Such a report should set out in detail probable costings, and consider the desirability of establishing a pilot scheme in a particular area in order to assess more accurately costs, administrative problems in staffing, teacher attitudes and any impact on retention rates.

5.5 The Zoning of Secondary Schools

The long period of rapid growth after the second world war resulted in most state education systems adhering to strict zoning requirements for secondary schools. Strict zoning arrangements appear particularly necessary when growth is rapid and the building programme is tight. It was not uncommon for holding classes for a new school to exist in an established school prior to the new school becoming available. Indeed, all states could cite examples where a new school, admitting students only at the first year of secondary schooling, exceeded 1,000 enrolments in its third year of operation. To allow a free choice of school in situations of such rapid growth was seen by most educational administrators as an invitation to chaos and horrendous administrative nightmares. Now that the period of rapid growth is over, there is a powerful case for the relaxation of zoning requirements. Indeed, if enrolments decline the case becomes overwhelming. There is no need, of course, to carry out dezoning in a manner which results in students living within a few yards of the school of their choice being unable to attend it because it is already full. An effective dezoning can be carried out by creating a small "zone of right" around each secondary school. Students living within a "zone of right" must be accepted by the local school if they desire to attend it. Each potential first-year student is then given a chance to select schools that they wish to attend in order of preference. Wherever possible, the potential student is allocated his or her first preference.

As S.A. secondary enrolments had declined proportionately more than any state exhibiting decline, this kind of system was introduced in 1980. Information from the S.A. Department indicates that 31 per cent of first-year

students opted for a school other than the local school, and only 2 per cent of all students failed to secure their first preference.

As pointed out previously, there is no necessary economic advantage in arrangements which distribute surplus capacity evenly over a whole system. Indeed greater dispersion in school size will reduce costs per student. Dezoning, if it leads to dispersion of enrolments, may of itself create situations where closure of a particular school is easier to carry out than would otherwise be the case. The expression of community attitudes about what are perceived to be "better" schools may indeed encourage all schools to consider more carefully their role within the community, and in what respects their performance is seen to be below standard.

In most enrolment projections it is assumed that the weight of enrolment decline will fall on the government sector. Even though some non-government schools face excess demand for their places, and most have means of attracting more students, it is hard to see the *a priori* validity of such an assumption. However, the recent work carried out jointly by the Schools Commission and the Commonwealth Department of Education - "Relationships Between Government and non-Government School Enrolments in Australia" - does demonstrate a significant inverse relationship between the proportion of non-government school enrolments to total enrolments and the rate of growth of total enrolments. It may be that the assumption that the weight of enrolment changes - up or down - will fall on the government sector is not far from the mark. However, it would be premature to rely absolutely on such an assumption for a period of significant decline in total enrolments. The growth (positive or negative) in enrolments over an urban area is far from even. Non-government schools, particularly the non-Catholic schools and the Catholic Colleges, are unevenly distributed and are relatively more heavily concentrated within more affluent suburbs. They are usually not well represented in the fringe growth areas. *A priori*, one would expect a significant enrolment decline not to bypass non-government schools in its effects. (The complexity of issues relating to the changing mix of enrolments across government and non-government schools is such that this study has not had time to undertake a thorough analysis. There would seem to be a strong case for a supplementary study of these issues.)

It is certainly true that the nineteen-seventies saw significant improvements in resource use per student in most non-government schools, more particularly within the Catholic schools and colleges. These changes, brought about by significant assistance from both Commonwealth and State Governments have undoubtedly improved the attractiveness of the non-government sector. As the Commonwealth Department/Schools Commission Report makes clear it is at the interface between the primary and secondary years of schooling, that the highest apparent net transfer rate towards the non-government sector occurs. It is at this interface that strict secondary school zoning within the government sector restricts the choice available to parents. One often hears of examples of the zoning system causing some parents to select a non-government school. In a period of enrolment decline, particularly, dezoning of secondary schools should have some impact in maintaining government school enrolments by presenting those, who do in fact choose between government and non-government schools, with a wider choice. It is not, however, possible to measure the potential impact of dezoning on total government school enrolments, at least not until the 1980 net transfer rates into the S.A. non-government sector can be calculated.

In any event, dezoning of secondary schools can be carried out in any area of reasonably stable or declining enrolments in a manner which gives a much wider choice to the public and avoids, at the same time, any risk of chaos. Once dezoning has been made operative for a few years, it should establish more clearly what schools, if any, should be closed, if budgetary circumstances force such policies upon education authorities.

Dezoning, by inviting the exercise of parental choice across government schools, will not only give communities a greater involvement with school systems, it will act to sharpen the sensitivities of school administrations and teachers to community preferences. A sizeable proportion of parents may be dissatisfied with aspects of the government school in their area. Dezoning, by enlarging the range of choice, and by encouraging government schools to respond to competitive pressures, may well serve to improve the overall quality of government schools and so moderate the often divisive tendencies evident in the current system.

It is *recommended*, therefore that all education systems move to dezone secondary schools to the extent practicable as an immediate measure. If portions of an urban area are growing too rapidly to permit dezoning within that particular region, it is recommended that the remainder of the urban area be dezoned as rapidly as possible. It is quite possible that in an urban area exhibiting net growth, the pressure on schools in the growth area may be relieved by dezoning elsewhere, particularly if the dezoned schools are accessible by public transport. It is considered that it is an inappropriate approach to allow regions of an urban area to develop their own policies on zoning. It is *recommended* that education authorities should adopt a system-wide approach directed at achieving the greatest possible relaxation. As part of this process schools should be encouraged to innovate and offer attractive alternative educational programs.

5.6 Co-operating Schools

As enrolments decline in a secondary school certain curriculum consequences follow. Broadly a school has two options - either to maintain the range of curriculum and subject choice, or to accommodate curriculum to the new situation. The former approach has two related results - class sizes tend to fall in certain specialty areas particularly in the senior years and because the improvement in the PTR is not sufficient to compensate for this change, class sizes must increase in so-called "core" subjects, particularly in the junior years. The school takes its cut in "core" subject teachers and retains its specialists. Obviously there is a limit to this process, and if enrolments continue to decline the range of curriculum must be reduced.

In a real sense an approach involving amalgamation of schools is an attempt educationally to avoid the worst effects on curriculum of declining school enrolments. However, outright amalgamation, by being more efficient in an economic sense, has consequences for personnel employed that are restrictive, and may create strong opposition within the community and the teacher organisations.

An approach which encourages neighbouring schools experiencing declining enrolments to co-operate in the provision of joint classes has much to recommend it, particularly because co-operation can develop out of local initiatives and may require only minimal support from the central authority.

The easiest step to take is to provide for joint classes in the senior years in those subjects where ordinary enrolments in each school would be small. The resulting economy in the use of specialist staff enables a greater range of curriculum to be maintained. If the neighbouring schools are not within walking distance, the only problem arises with the transport of students to and from each school. It should be possible to timetable jointly for both schools in a way which minimises transport requirements, for example, organising the joint classes for a limited number of mornings or afternoons each week. If the bus transport charges, through private hire, were no greater than \$100 per week the annual cost would not exceed \$4,000 per annum or a quarter of an assistant teacher's salary near the top of the assistant teacher's range. It would not be unreasonable for this cost to be met by the central authority and even if that were not possible, a small adjustment in the staffing formula for each co-operating school would not erode a significant proportion of the staffing economy gains made by the establishment of joint classes.

An alternative approach would be for a small 20 seater bus to be purchased for the co-operating schools. A bus of this nature costing \$15,000 to \$20,000 would have annual operating costs, including depreciation, which would be unlikely to exceed \$4,000 per annum, so long as appropriate arrangements can be made internally for buses to be driven by teachers, or by ancillary staff. Such an arrangement would provide greater flexibility in the timetabling of joint classes. No doubt other uses would be found for such a vehicle, and the actual costs attributed to the running of joint classes might turn out to be minimal.

Arrangements of this nature have worked well within the non-government sector, arising particularly from the cost of providing matriculation classes. There is little reason not to encourage their adoption by neighbouring government schools.

Co-operation, once established between the neighbouring schools, can extend a stage further. It may turn out to be practicable, by agreement, to develop co-operation to the point at which one of the schools becomes virtually a junior high and the other a senior high, but without the

disadvantage that staff are allocated exclusively to either section. This kind of development would have distinct advantages over a mutually exclusive junior high - secondary college system. First, it would permit more effective use of staff, as no one member of staff would spend necessarily all his or her time teaching in one of the schools. It is much easier to transport staff than students during a school day, even if the former eventually claim compensation for any cost involved. Secondly, it would be a development reached by consent and would avoid some of the attitudes that teachers develop in an arrangement which establishes exclusive senior and junior high schools.

Because the kind of developments alluded to above would evolve through co-operation, the Education Authority concerned would not be committed to the construction of specialist secondary colleges in those portions of the total urban area that were still expanding. There would be, however, greater costs of transport, as some percentage of students would, at any one time, be travelling further to get to school. Transport subsidy arrangements vary from State to State, and in some cases at least a portion of this additional transport cost would appear as a charge to the Education Authority.

It is *recommended* that Education authorities encourage neighbouring schools, particularly in areas where enrolments are declining and the range of curriculum offered is under pressure, to co-operate in the establishment of joint classes and joint use of facilities. It is further *recommended* that, once forms of co-operation are established, the co-operating schools be assisted to extend co-operation further even to the extent that one (or more) school evolves into a junior high while the other takes on the appearance of a secondary college.

5.7 The Establishment of Primary Classes within Urban High Schools

The distinction between Primary and Secondary Schools is obviously artificial. Wherever the line is drawn, there is no fundamental reason why education systems should not be flexible in their approach to this division. It might be possible for example, particularly through co-operation with the organisation responsible for kindergartens, to convert each primary school in an area to a junior primary, covering the kindergarten years and the primary years to, say, Year 3, while the local high school facility incorporated within its structure the remaining primary years.

It might be possible to staff and run a small junior primary school, incorporating the kindergarten grades, on a relatively efficient basis, particularly if there were community uses for otherwise unused portions of primary school buildings and playing fields which helped meet the non-salary costs of the facility. It is conceivable also that parental concern about the closure of a primary school would be significantly moderated if the junior primary years were retained, and as a consequence parental fears about very young children travelling longer distances eliminated.

On the other hand the incorporation of senior primary grades into an established high school with unused facilities might also have staffing advantages, more particularly if the high school itself had been converted to a junior high. There is nothing magical about the year of transfer from primary to high school. Certainly, with minimal adjustment, most high and primary teachers could cope with teaching classes at a lower or higher level than the level to which they were accustomed. It could be possible, therefore, to achieve a more effective use of staff and make easier the maintenance of curriculum offerings in the secondary portion of the combined school. Certainly, such an arrangement would permit economies in the use of executive and ancillary staff, although it may be doubtful whether the former could be realised.

Because such a change as envisaged here would cut across existing interest groups both among administrators and teachers, it could only be carried out with the most careful preparation. Furthermore, it would need detailed investigation to determine precisely the educational and economic advantages and disadvantages. Teacher representation on such an investigation would be vital in order to overcome suspicions that might otherwise develop and it would need to be recognised that such a reorganisation would be largely pointless if it achieved nothing more than a reshuffling of the existing resources.

In view of these circumstances it is not possible to make any specific recommendation.

5.8 The Establishment of Secondary Classes within Urban Primary Schools

A converse of the option discussed in 5.7 above would be the establishment of secondary classes in an urban Primary School, thereby creating a school similar to an Area or District School, or to a Victorian Central School. In a sense this option could well be considered a sub-option to the establishment of secondary colleges, particularly in an area where primary enrolments had stabilised or were falling while secondary enrolments were still rising.

The fundamental problem in moving to this option arises from the need for specialist secondary facilities, particularly for science. Additional building requirements or conversion costs might eliminate entirely any economies that could be achieved, for example, in staffing arrangements. Most of the problems encountered in 5.7 would be experienced under this option, and again it is not possible to make any specific recommendation.

5.9 The Establishment of Specialist Secondary Schools.

While the post-war years have seen some movement towards comprehensiveness in Australian secondary education, there is a growing recognition that certain specialist skills can only be developed if considerable effort is expended on children at an early age. The modern world does not produce top-class musicians, dancers and linguists, for example, from students who have commenced their detailed study or practice late in their early adult years. On the other hand, top-class singers are normally not associated with training at an early age - the development of the necessary breath control is not advisable for a student who is not fully developed physically.

Young students do have special capabilities, both physically and mentally, which if they are not capitalized on at the appropriate time, may never be properly developed. An objective of an education system is to develop the talents of each individual, whatever their talents may be, to the fullest possible extent, and this can be argued to require some special efforts to develop the talents of the gifted. At present, the great difficulty that gifted students experience is that with a full school day

occupied with subjects other than their area of special interest, the hours after school must be used to develop their special talent. Often the student's special interest takes up such a large amount of what otherwise would be leisure time, that he or she is deprived of many of the experiences open to other students. There is a case, therefore, wherever it can be done reasonably, for incorporating certain special interests into the normal school curriculum, thus lessening the time required to be spent after school hours. Part of the objective of specialist education should be, however, to expose talented children to influences outside their special area of interest. The case for specialist schools is not for schools to collect together students who only have the one special interest, but rather for grafting on to a normal comprehensive school, a "sub-school" which caters for that special interest. Entry into the "sub-school" must be selective and no zoning need apply. While other arrangements can be organised, there is no reason why the special interest students cannot be timetabled so that subjects taken outside their special interest are studied in the normal school classes.

There are additional costs attached to such an arrangement. For example, on staffing, the special interest area may require a PTR equal to half the normal level. Consider, for example, a school of 1000 students, of whom 100 have a special interest which takes up one-quarter of their school time. If the normal staff-student ratio were 1:16, and the staff-student ratio is 1:8 for the special interest component, i.e. applicable to 100 students for 25 per cent of the school day, the staff allocation rises from 62.5 to 64.1. In addition, of course, there will be a requirement for special facilities: however, if schools with declining enrolments are selected, the specialist areas may be obtained by conversion of unused space. The capital costs, as a consequence of careful school selection, can be kept to a minimal figure.

One advantage of specialist sub-schools as part of ordinary high schools is that they may affect the balance of enrolments between government and non-government schools. First, so long as the job is done properly, the standard of achievement will be much higher than is normally reached in any school - government or non-government. Secondly, as such schools develop this may improve the overall community perception of the quality of government

schools compared with non-government schools. If declining enrolments create very difficult personnel problems, policies which may help offset the balance of enrolments between government and non-government schools may become particularly attractive, so long as the cost of such policies can be kept within reasonable limits.

5.10 Multi-Campus Schools

In principle there is no reason why a single school should not have more than one campus. For example, if a number of secondary schools within an area experience declining numbers, they could all be converted into one school with a series of separate campuses. Each campus would concentrate students in particular years or groups of years, in order to concentrate greater numbers of students involved in similar activities. Indeed, the case considered above where a number of high schools were converted into one secondary college and a series of Junior high schools could be treated as a multi-campus school organised under one administration.

Much of the discussion on the establishment of secondary colleges is applicable here. The problem is that while the potential economies are significant, there may be significant countervailing forces that prevent economies being realised during a period of declining enrolments. The multi-campus school concept reduces the number of positions for "Principals". That reduction could probably be managed in a period of rapid expansion, but it will be difficult to get agreement from teacher organisations in a period of contraction, where promotion rates become very slow. An arrangement which may be possible is for a person in charge of a campus away from the central campus to still be classified as "Principal". However, as with most arrangements designed to get a new approach agreed, compromises such as this one inevitably result in portions of the potential savings being lost.

Multi-campus schools are likely to experience serious problems of morale. Those involved in a campus away from the area where the central administration is located will invariably believe that decisions that are adverse to them are taken because they are geographically isolated, and not for the perfectly legitimate reasons that may have prompted those decisions. Remoteness from the decision-making centre often leads to feelings of

isolation and neglect, and relatively poor morale. On the other hand, participation in decision-making is invaluable when it leads to better decisions, and to a better understanding of the complexities that face the decision-makers, and so long as it does not lead to serious delays in the whole process which prevent effective responses to new situations. In practice, there are many circumstances where decisions must be taken promptly. This can be consistent with a feeling of general staff involvement if there is a mechanism whereby the staff member's point of view is expressed and considered whenever strong feelings are aroused, and so long as there is effective communication of the rationale for the decisions taken in those instances in which there has been no time for effective involvement. The great difficulty in the multi-campus school will be to create appropriate mechanisms which generate the feelings of involvement and commitment for those who are remote from the central campus.

Techniques which help to encourage good morale in a large organisation, or in a multi-campus school, are invariably time-consuming, and therefore costly. Some of the potential savings in cost must inevitably be used to promote good morale.

As the notion of a multi-campus school is a generalisation of the secondary college and junior high school concept, our basic recommendation in that section would be applicable also to this option.

5.11 Summary

Because greater dispersion in the size distribution of schools will reduce costs per student, there need be no concern that dezoning of schools will create additional economic problems. Indeed, dezoning may assist in the identification of schools which are prime candidates for closure. Because such schools will have been selected by student and parental choice, rather than by bureaucratic procedures, there is a sense in which dezoning is a policy ancillary to policies for school closure. However, dezoning does have other merits, particularly in enabling the education system to be more responsive and to perform more satisfactorily for a wider range of students in the community. In addition, it may assist in transferring to the non-government sector part of the problem of declining enrolments.

Any policies designed to secure better use of educational facilities, either in an economic or educational sense, will have a better chance of success when enrolments are expanding than when they are declining. Indeed, most options considered in this chapter, if they can be carried out effectively, reduce the requirement for staff, including those in promotion positions. As a consequence, if enrolments are declining, personnel management will become more difficult. It is a clear conclusion from the arguments of this chapter that effective policies of personnel management are necessary in order to manage educational facilities in a period of declining enrolments.

The closure of some schools will be unavoidable. However, in considering closure it is necessary to appreciate the order of magnitude of cost savings. The greatest savings in cost will occur where a school has an alternative use for commercial or industrial purposes. The latter savings are likely to be made if budgetary arrangements are altered so that funds secured from the sale of school property can be used as an *additional* benefit to the education budget, either recurrent or capital.

Of the various options considered, one which may be most likely to produce positive results is the encouragement of those neighbouring schools, experiencing enrolment decline, to co-operate in the joint provision of classes and joint use of facilities. Such co-operation can be effective, at minimal cost, in avoiding the adverse consequences of enrolment decline on curriculum.

It is also *recommended* that consideration should be given to the establishment of special-interest sub-schools within ordinary high schools as a means of achieving educational objectives for certain groups of talented students, thereby strengthening the competitive position of the Government sector.

CHAPTER 6: PERSONNEL MANAGEMENT

6.1 Introduction

At the commencement of this study there were various assessments as to the importance of personnel management policies in a regime of changing enrolments. However, increasingly as the study progressed it became clear that the question of personnel management loomed larger than was first thought. In a real sense this was due to the fact that education authorities, acting under budgetary pressure, would wish to manage facilities in a manner which was most efficient but still consistent with the attainment of educational objectives. With salary and associated costs at about 80 per cent of total recurrent costs it is rarely possible to improve efficiency without reducing the employment of personnel unless there is some growth in enrolments. Thus the effective management of facilities becomes also a question of the effective management of personnel.

Australian education authorities are faced with a surplus of teachers, brought about mainly by slower growth in total demand and reduced resignation rates as discussed in Chapter 2. The basic trends may alter in intensity over the next decade, if growth of the resource related sector leads to widespread growth in employment of graduates.

It is important to note how various factors reinforce each other. For example, the decline in resignation rates is heavily influenced by the existence of alternative employment opportunities. But the biggest decline in wastage rates has been among female teachers, and here wastage rates have been affected by the general tendency to defer children which is in part influenced by economic conditions. High levels of unemployment elsewhere in the economy in the last five years have contributed to reduced wastage rates. The tendency to defer children is also reinforced by the increasing concern as to the chances of re-employment, which in turn is reinforced by the effect of declining birth rates on enrolments.

The most significant destabilising force arises from the interaction between shortage or surplus and resignation rates. A shortage of teachers makes it easier for teachers to resign if they are planning overseas trips, or

children etc., and the higher resignation rate reinforces the shortage. On the other hand teacher surplus lowers resignation rates because of concern about future re-employment, and the lower resignation rate reinforces the surplus.

Whatever the cause of prevalent teacher surplus and the sharp reduction in resignation rates, it is important to recognise that it creates a daunting prospect even for those younger teachers who remain in employment.

We have no adequate figures for wastage rates among those in promotion positions. Nevertheless, it is clear that it is very low indeed, and probably does not exceed one to two per cent, particularly because of:

- (a) the bias in the age distribution of those currently in promotion positions;
- (b) the pressure towards reduction of those in administrative positions or of those carrying out an advisory role, and the much lower rate of promotion of people in schools into the administration; and
- (c) the inadequacy of alternative employment opportunities.

The overall result has been a dramatic slowing down, and even stagnation, in the rate of promotion of assistant teachers into senior positions. The ghost of Spencer Button, long since forgotten in the decades following the second world war, has been resurrected and plagues the mind of the young, assistant teacher today who knows of the rapid promotion of the previous generation of assistant teachers - no doubt many of them less competent than teachers awaiting promotion today. Such a teacher sees a virtually endless vista of "stagnation" at the top of the assistant's scale. Indeed, if enrolments are falling more rapidly than wastage rates the young teacher is faced with the prospect of *deteriorating* promotion opportunities, as some senior teachers become surplus to requirements and must work as assistants until a suitable vacancy occurs.

While this dismal prospect is being contemplated, education and economic advisers are aware of pressures on each State Government's revenue position and so seek economies in education expenditure to achieve a more

efficient use of resources. The experts suggest that economies can be achieved by a number of policies, all of which for their effectiveness require a reduced number of promotion positions. It is little wonder that some teachers tend to become unco-operative even with the most benign of employers. Each new proposal is viewed with increasing suspicion, and effective co-operation between teacher and administrator becomes even more difficult.

The freeing up of this situation is fundamental if any adaptability to changing circumstances is to be achieved. Personnel management policies, instead of being an aspect of an education system's adjustment to changing enrolments, ought to become the lynchpin for achieving any kind of effective adjustment. Furthermore, in assessing personnel policies the lack of adequate promotion potential must be seen as a critical factor. For example, it is one thing if the number of assistant teachers on long service leave at any time is expanded significantly. It is another thing again, if the number of teachers in promotion positions on long service leave at any time is expanded significantly. The former will permit the employment of assistant teachers currently surplus to requirements, but the latter will permit both the promotion of assistant teachers and the employment of assistant teachers currently surplus to requirements. The distinction between the two situations is absolutely vital in the consideration of policy options that now follow.

One further general comment is necessary. It is that if a policy is applied to teachers in promotion positions only, and the policy involves some cost to the current budget, the restriction to those in promotion positions may be justified because a given budgetary cost is producing the maximum impact on the promotion "snarl", without altering significantly the number of new assistants that can be appointed.

6.2 Early Retirement

Superannuation schemes vary from State to State. By the end of the 1960's most schemes were required to fund approximately 30 per cent of members' pensions from contributions made during the working life of the pensioner. The rapid inflation of prices and of current salaries during the 1970's created a demand and a strong case for indexation of pensions.

Indexation is now the general rule, but the consequence has been to reduce significantly the proportion of a contributor's ultimate pension that will be paid for by the contributor's own payments. Governments are now paying from 75 per cent to 82 per cent of pensions, despite action enabling superannuation funds to seek out more profitable investments. Retirement at age 60 is tempting for many employees and some superannuation schemes make it an attractive proposition, but that attractiveness makes it an expensive option for Government, as an employee at age 60 has a life expectancy some 4.5 years greater than an employee at age 65. There are a number of States where retirement at age 55 is permitted, although the resultant pension makes a more adequate allowance for longer life expectancy and is not intended to be attractive - nor is it so regarded.

It is worth noting that if a teacher in a promotion position or one at the top of the assistants' scale is encouraged to retire at age 59 rather than age 60, there is a saving in the education budget of \$5,000 approximately - ultimately an assistant at the top of the scale, either retired or promoted, is replaced by an assistant at the bottom of the scale (assuming for this purpose, the minimum salary to be one for a teacher with a degree and a teaching qualification). If the teacher retires at age 58, the saving approximates \$5000 in the first year and \$4,250 in the second, while, for a teacher retiring at age 55 the saving over 5 years approximates \$18,000.

Unfortunately, from any Government's point of view, the cost of providing the government's share of pension from age 55 to age 60 is still expensive and would probably exceed \$18,000 by a factor of 2.5 to 3. This simple exercise amply illustrates the problem in fostering early retirement, particularly if pensions are to be made more attractive from age 55 to 60. The situation might be improved if the pension were made more attractive, but the retiring teacher is required to commute a certain proportion of the pension without a reversionary right (back to the original pension) to the spouse should the pensioner die. This situation arises because the younger the pensioner is at retirement, the more attractive commutation is to the State at the rates which apply under State Superannuation schemes. Commutation normally remains attractive to the employee because it enables income splitting (and a tax benefit) while the superannuitant remains alive, and the passing of a lump sum to successors on death.

In any event, it would normally be the case that policies directed at making early retirement more attractive would be an expensive method of freeing up promotion and employing more assistants. If Superannuation Acts were to be amended it would be difficult to confine the benefits to teachers, let alone a particular category of teachers. The wider the range of beneficiaries, the more expensive the amending proposal would become. Furthermore, while the additional expense might be tolerable now, it could well become intolerable in 15 years time when much larger numbers of teachers became eligible for retirement. In circumstances where budgetary pressure for economy is very strong, it is difficult to advocate improvements in superannuation schemes, particularly because governments find it almost impossible to remove a benefit once it is granted.

However, some superannuation schemes may have fallen well behind the standard applying in other States. If this is the case, and the scheme is to be improved at some stage, there could be a case for bringing forward that improvement even if initially the early retirement provisions applied only for those professions where there was a surplus supply of potential employees.

An interesting experiment has recently been introduced in South Australia. Teachers in promotion positions who retire between the age of 55 to 60, while their superannuation benefit remains unchanged, will be able to take employment as relieving teachers for up to 2 days a week until age 60. No amendment to the Superannuation Act is involved, and the requirement for a certain quantity of relief teaching would exist anyway. There is no additional cost to the budget apart from the earlier payment of accrued long service leave (see below), and the earlier payment of existing superannuation rights. Each retirement eases the promotion situation and in the first year saves approximately \$5,000 by replacing an assistant teacher (now promoted) by an assistant teacher at a minimum salary. The only offset to the additional employment offered is the reduction in relief teaching that can be offered to those who remain unemployed. It should be noted that the \$5,000 saving is increased to approximately \$7,500 if the teacher "promoted" was a supernumary senior who was being paid as a senior but worked as an assistant. This proposal deserves to have an impact, as it has a certain artistry in the manner in which it matches facets of the employment and budget situations.

It is *recommended* that the S.A. innovation, if shown to have an impact on early retirement, be considered for implementation in other Australian States.

6.3 Long-Service Leave

Since the Commonwealth Budget of August 1977 any accrued long-service leave, beyond that already accrued at August, 1977, and taken as a lump-sum on retirement will be taxed at a rate of 32 cents in the dollar. Long service leave accrued prior to August, 1977 will continue to be assessed, if paid as a lump-sum on retirement, by adding 5 per cent of the lump-sum to taxable income for the year in which the payment is received. There is no longer an incentive for teachers, or any taxpayer for that matter, to accumulate leave beyond that already accumulated by August 1977.

Current long-service leave practices date from the years of teacher shortage when the taking of long-service leave every time three months leave fell due could well have exacerbated the awkward teacher supply situation. These conditions no longer exist, and as long-service leave legislation permits the employer to enforce the taking of long-service leave as it falls due, that legal right should now be exercised. Lengthy accumulation of long-service leave should not be allowed during a period of teacher surplus, and existing accumulations should be required to be reduced over the next 5 to 10 years.

It should be noted that accumulation of long-service leave until retirement creates a considerable cost to the community, particularly if the retiring salary (discounted for inflation) exceeds the salary that applied when the long-service leave could first have been taken. In a sense, that cost is currently being met by those unemployed teachers who could be employed as replacement teachers if long-service leave were not accumulated. Governments and Treasuries are aware of the ultimate excessive costs to State Budgets that arise from unnecessary accumulation of long-service leave. This awareness should lead to a willingness to increase budgetary allocations to education departments to permit the employment of replacement teachers for those on long-service leave. The trade-off to the increased cost now is a future saving which will tend to exceed the cost even when the latter is adjusted upwards at the rate of inflation.

It is true that the old "unit" superannuation schemes in a period of inflation left most employees, on retirement, with the problem of buying extra units. The lump-sum leave payment was a useful method of financing that purchase. However, all schemes now are based on a percentage of salary to be contributed throughout the employee's period of employment, and the problem of purchasing additional "units" prior to retirement no longer exists.

A required accelerated taking of long-service leave can be used particularly to free up "promotions", and the impact from a determined attack on the problem could be significant. Suppose that at present those in promotion positions have accumulated 6 months leave on average. A requirement that the accumulation be eliminated over the next 10 years (by which time further leave would have accumulated) would result in up to 5 per cent of those in promotion positions being on leave at any one time. The correct figure is less than 5 per cent as some of those in promotion positions would retire in the meantime. To the extent that leave during the school year was relatively uniformly distributed, significant additional permanent promotions could be made so long as those promoted accepted a requirement for mobility at least for the first two or three years. By the end of that period of time enough wastage would have occurred for the new batch of promotions to bear the brunt of movement every 6 months or so.

It is often argued that a really firm approach to leave might cause excessive disturbance within schools. If we compare turnover rates now, even for those in promotion positions, against the situation of a few years ago, this argument is seen to be dubious. Even if the taking of long-service leave when due became compulsory, and the elimination of accumulated leave was spread over 10 years, staff turnover rates in each school would not match, or get anywhere near matching, the turnover rates of a few years ago. In any event, in a number of cases the staff turnover might be a welcome relief for students, and could allow teachers to use leave for the purpose it was originally intended and return to their schools refreshed and with renewed enthusiasm.

It is argued by some that the preponderance of public holidays in the first six months of the year, produces a bias towards taking leave during

the latter half of the year. We have not obtained information which confirms or confounds this argument. If it were true, however, it should be a simple matter to amend the appropriate legislation to permit a minor adjustment for those who were disadvantaged by an abnormal number of public holidays when on leave. However, the normal seasonal increase in long-service leave in Australia's winter months is most probably due to teachers' desire to travel overseas and gain the maximum access to northern hemisphere summers.

It may be argued that a further problem in using a policy of accelerated taking of long-service leave as a means of making more promotions, as well as employing more teachers, arises from the problems faced by Education Authorities in securing sufficient mobility of teachers. Reduced postage rates and a slowing down of promotion creates extreme difficulty in ensuring that teachers, who have already done a fair stint of country service and who wish to return to the urban area, are able to do so and can be replaced by "city" teachers who have had no country service. Education Authorities have really no choice but to win on this issue. However, it should be noted that the long service leave approach suggested may assist and not hinder the return of country teachers to the city, and in particular those in promotion positions. Because teachers in country schools are, on average, younger than those in city schools, the extent of accumulated long service leave in city schools will be more than proportionate to the percentage of teachers in those schools. Country teachers in promotion positions may be able to return to the city at an earlier date so long as they can accept some degree of transfer from school to school within the city for, at least the first 18 months or 2 years. At the same time those to be promoted can be offered that promotion in a country school.

In concluding this section, it is probably important to record that there is no longer any satisfactory reason for avoiding the proposed alterations to long-service leave policy. It is *recommended* that, on grounds of equity to those unemployed and those waiting for promotion, and on grounds of economy in the management of the budget in each State, restrictions should be placed on any further accumulation of long-service leave. It is *recommended* further that those who have accumulated excessive long service leave, should be required to reduce accumulated leave to no more than 3 to 4

months by the end of five years, and to no more than 1 month by the end of 10 years. In addition, it is *recommended* that standards should be set as to the extent of accumulation of long service leave at any one time. It is *recommended* also that Education Authorities make approaches to secure additional funding to permit an early attack on the problem. Finally, it is *recommended* that those in promotion positions should be the first group required to take long service leave if funds are insufficient to apply a common policy across the service.

6.4 Leave Without Pay

The need for more generous leave without pay provisions arises directly from the reduction in wastage rates. Many teachers in the 1950's and 1960's could afford to resign to travel overseas in the relatively secure knowledge that a position would be readily available on their return. In the 1980's, the consequence of resignation in order to travel overseas would almost certainly be unemployment on the teacher's return. As a result, most teachers now choose to defer an overseas trip until they are eligible for leave without pay.

There is a clear case for more generous leave without pay standards, *so long as the number seeking leave each year remains a steady flow*. It is vital to avoid a situation where a sharp jump in those permitted leave without pay is followed by a significant falling off in later years. Teachers can be appointed to replace those on leave without pay so long as the higher level of those on leave is maintained from year to year.

It is *recommended* that such a policy be followed.

6.5 Secondments, Advisory Teachers and Administrative Staff

Most education authorities, through Public Service Board imposition of rigid and contracting staff ceilings are being forced to cut back on numbers of Senior Administrative Staff, Advisory Teachers, Secondments and other special arrangements. These cut-backs, which for people in the latter categories forces them back into schools, are a significant source of the promotion problems that are now dominating the scene. They are also a source of reduced employment of new teachers.

The cuts in these areas are typically applied on an ad hoc basis without an adequate consideration of the problems that are being experienced.

It is particularly noteworthy that in a period of declining enrolments, decisions which would have been easy in a growth situation, suddenly take an inordinate length of time. The overseas literature is full of examples of the additional work-load created for administrators by a regime of static or declining enrolments. If reductions in staff at the administrative and advisory levels are imposed arbitrarily, then the danger that the system will not be able to adapt effectively to changing circumstances is increased inordinately.

Arbitrary cut-backs in the numbers employed in an administrative, or in an advisory capacity, is one of those public service stupidities which are a product of financial stringency. The adverse effect on the morale of administrators, already under heavy pressure, is incalculable. What is worse is that administrative and advisory services to the schools are seriously affected, with adverse consequences on teacher morale. If teachers hit back at those who are most visible and most readily reached, the arbitrariness of governments, acting through public service boards and treasuries, produces ultimately a deteriorating relationship between schools and education administrators. And if administrators endeavour to manage the new situation without complaint they exacerbate the extent of deterioration, while if they make it clear where the fault lies they are "accused" of disloyalty by the very people who imposed the arbitrary decision in the first place!

There is no excuse for the unreasoned arbitrariness of this approach. There can be no substitute for a rational consideration of what cut-backs are possible without producing undesired and unproductive consequences. It is totally inappropriate to force administrative cut-backs on the political grounds that no reduction in teachers actually employed in schools should be visible.

In fact, of course, the kind of approach described above can, as well as disturbing relationships between schools and the administration, exacerbate directly the problem of inadequate promotion rates into senior positions. Indeed, it may be directly responsible for creating a situation

where there are not enough promotion positions in the schools for those currently eligible and required to work in the schools.

If enrolments are declining, the PTR can still be improved, even if the number of people employed in an administrative or advisory capacity is expanded. Furthermore, there need be no impact whatsoever on the number of new teachers to be appointed.

It is *recommended* that all governments re-examine policies with respect to the numbers of administrative and advisory personnel that are employed, in order to ensure that these numbers bear an appropriate relationship to the tasks required to be performed, particularly during periods when the problems of declining enrolments intensify administrative work-loads.

6.6 Inter-system Mobility

It is apparent that there is significant variation from State to State in projected enrolments and in the likely future demand for teachers. When all States experienced a teacher shortage, the inter-system transfer of teachers was not seen as a pressing problem. However, that situation no longer applies, and it is common sense to develop policies which encourage inter-system mobility particularly where greater mobility would relieve any developing shortage of specialist skills. Furthermore, it would be wasteful for one system to seek to expand teacher training in a specialist area where some shortage was apparent, if fully-qualified teachers can be obtained from elsewhere in Australia.

It is not a difficult matter to secure the mobility of exit students or of fully-qualified teachers who are unemployed. However, it would be of benefit also to encourage the inter-system transfer of those who are already employed. The decades of teacher shortage provided an important safeguard against "in-breeding". But in times of teacher surplus it is too easy, year after year, to employ only exit students from one's own State, the majority of whom were educated in schools in that State. There is much to be gained in encouraging interchange between education systems, particularly in the direction of achieving a greater breadth of outlook in the teaching force and

a broad understanding that there are invariably other ways of solving particular problems.

It is also worth stressing that Australia is on the verge of significant population growth in certain resource intensive geographical areas - and it is appropriate that educational policies assist the shift of teachers to these regions of economic growth.

Inter-system mobility of those already in employment requires arrangements which secure effective portability of long service leave and superannuation rights. These matters have been of concern to Education Authorities previously, and some progress has been made. It is *recommended* that work in this area should be re-activated, preferably by the establishment (or re-activation) by the Australian Education Council of an inter-system working party.

6.7 Part-time Employment

Greater employment opportunities can be created by policies designed to secure the greater use of teachers employed on a part-time basis. The more rapid decline in resignation rates among female teachers is a consequence of many forces, but it is partly a result of concern about prospective re-employment should a teacher resign, for example, to have children or to care for a family. The opportunity for part-time employment might well affect decisions on the timing of children and the taking of accouchement leave. It is also possible that many women who completed their families and returned to teaching in the sixties and early seventies, would prefer part-time employment now if that were offered as an option. While part-time employment is not available full-time employment may well be preferred to no job at all. It is of interest that from 1975-78 the proportion of part-time employees declined, though absolute numbers remained roughly constant (ABS 4202.0).

The expansion of education in the decades since the second world war, has been a very important source of employment opportunity for women.²⁵

25. Documented e.g. by Burke, 1979, p.18, pp.29-30.

If the nineteen eighties are to be years of very limited expansion in education, there may well develop a still higher unemployment rate among women, the social consequences of which may be unacceptable. Greater opportunities for part-time employment would be a significant offset to such a development. It is true that there can be administrative difficulties within schools, if fractional-time appointments become commonplace. Indeed, resistance at the school level may prove to be a serious barrier to the effective implementation of a policy designed to encourage part-time employment. However, the internal administrative problems of schools can be overcome and, if part-time employment is to be encouraged, determined effort should be made to overcome resistance within schools. Indeed, there are circumstances within secondary schools when enrolments decline, where fractional-time appointments of specialist teachers can assist in solving the problem of maintaining an effective range of curriculum.

While the usefulness of part-time employment will, on average, be much greater to women in the work-force, it is not confined to them. A number of men may also wish to take advantage of part-time employment, particularly where: (a) they are part of a two-income family; (b) they are getting close to retirement; and (c) there are alternative part-time, but not full-time, employment opportunities available.

An important adjunct to a policy of encouraging part-time employment will be to ensure that the necessary legislation permits part-time employees to qualify for long-service leave and superannuation on a pro-rata basis.

It is *recommended* that education authorities encourage the further development of part-time employment.

6.8 Study Leave

There is a strong argument to the effect that study leave should be a means of encouraging the proven and highly professional teacher to maintain and improve his or her skills. Others feel that all teachers should have access to study leave, on top of long service leave. Since this matter is largely outside the research brief we will not pursue the matter in any detail. We would note, however, that the usual consequence of budgetary

restraint is to reduce funds for teachers seeking part-time or full-time study leave. This arises partly because of a governmental predilection for achieving budget cuts without reducing teacher numbers in schools. Fundamentally, this is a short-sighted approach. The improvement in PTR's during a period of enrolment decline clearly allows an option of maintaining, or even expanding, appropriate study-leave arrangements without causing the PTR's that apply within the schools themselves to worsen.

In Australia, most study leave arrangements have been associated with the need for teachers to improve their academic qualifications. It is worth noting that the academic performance of such teachers has been, almost invariably, excellent.

Those systems where part-time study leave is a feature may be able to gain an additional administrative or curriculum resource by removing the teacher entirely from the school situation and using that teacher in some administrative or curriculum role during the time academic studies are not being pursued. A policy which implements cuts in funds for study-leave or scholarships, particularly for those involved on a part-time basis, may have the further consequence of reducing the effective resources of central or regional administrations.

The 1980 Report of the National Enquiry into Teacher Education recommended full-time study leave for all teachers "for one school term, or its equivalent, after every seven years of service in order to follow an approved program of professional development" (Auchmuty Report p.xxvi). Careful assessment of costs and benefits of adopting such a recommendation has not been possible within the time frame of this study.

It is *recommended* that all education authorities should review alternative study leave and scholarship programs for teachers keeping in mind the issues raised in the Auchmuty Report and the constraint imposed by the need to avoid a worsening of staffing standards in schools. Particular attention should be paid to conditions of eligibility for such leave. It is also *recommended* that part-time study leave arrangements be expanded in those instances in which such an approach is matched by teacher preference and any requirements of education authorities for additional part-time resources for administrative, research and planning, or curriculum purposes.

6.9 Contract Teachers

A situation of declining enrolments has led education authorities to offer contract employment to prospective teachers on a term-by-term or year-by-year basis. In some cases, such an approach has been resisted by teacher organisations to the stage of creating a serious industrial dispute.

While there is considerable scope for exploring a variety of possible contractual arrangements, it needs to be recognised that if teacher action is successful in resisting all contract appointments, the overall result must be for education authorities to achieve the necessary flexibility by employing a total number of teachers somewhat less than would otherwise be the case.

Some flexibility is clearly necessary, particularly where resignation rates are falling, and where education authorities would otherwise produce still greater fluctuation from year-to-year in the number of exit students from teachers college who were offered employment. It may be that the competent contract teacher appears to be treated harshly particularly in relation to those "tenured" teachers who are noticeably less competent. It is more likely, however, that the less than competent "tenured" teacher is treated with excessive consideration.

The long period of teacher shortage after the second world-war resulted in all education authorities becoming increasingly lax in dealing with problems of teacher incompetence. The reversal of the teacher supply situation creates the potential for improved performance in this area, even though industrial conditions may limit seriously the extent to which the potential can be realised. At least, however, the use of contract teachers when permanent employment can not, or should not, be guaranteed, ensures that for one group of people, at least, the less than competent do not survive as permanent employees.

Teacher opposition to contract appointments is, no doubt, based in part on the fear that the system will be extended and used as a weapon for ensuring greater teacher compliance even in circumstances where compliance

would be unprofessional. In the long-run professionalism and greater independence of schools is the teacher's protection against pressures from central authorities. Bureaucratic concern with administrative rules and procedures and a tendency towards excessive strengthening of the hierarchical nature of schools and administrations are factors which can also be moderated by policies such as contract employment and dezoning - since these policies will tend to place pressure for reform on those schools suffering from an excess of bureaucracy.

It is *recommended* that Education Authorities should persist with arrangements for contract appointments where it is not appropriate, on educational grounds, that permanent employment be guaranteed. It is *recommended* that a variety of alternative contractual arrangements be explored, with a view to balancing the need for quality and flexibility in teaching against the desirability of security of employment. In exploring such contractual arrangements, Authorities should recognise issues in industrial relations, be seen to encourage professionalism within the teaching force, and once circumstances permit to offer subsequent permanent employment when an appropriate professional standard of teaching has been demonstrated.

6.10 Summary

The argument in Chapters 4 and 5 made clear the personnel consequences of arrangements designed to manage facilities more effectively. Without flexibility in policies that affect personnel, such as the use of contracts, many options with respect to the use of facilities will prove valueless. This chapter has been concerned with the development of policy options on the personnel side that create more room for manoeuvre in the rate at which new staff are appointed, and more particularly in the rate at which staff are promoted into senior positions. While policies directed towards promoting early retirement seem attractive, they turn out to be expensive and, if the policies confer benefits on staff, they are not readily reversible. On the other hand, a concerted encouragement to take long service leave will create more positions at the assistant and senior levels. An immediate expense is created - an expense, however, which is offset by future savings

which in real terms may exceed the initial expense. Furthermore, policies on long-service leave are reversible to a degree.

The other options considered in this chapter if taken together may be significant. However, there is not the same impact on new employment, or on promotion, as is the case with the long service leave option.

CHAPTER 7: CONCLUSION AND SUMMARY OF RECOMMENDATIONS

With even the best enrolment projections that have been made for the eighties errors of projection by the end of the decade could be of the order of ten per cent. *It is considered important that this uncertainty should be communicated to Ministers when decisions that have long-term implications for facilities or personnel are being taken.* Total school enrolments are projected to decline over the next few years but to begin to grow again before the end of the decade. There is very great variation in the outlook between levels of schooling and between states and regions.

Because enrolment projections show a likely decline throughout Australia of four per cent in the eighties, and because Gross Domestic Product can be expected to grow in real terms, maintaining education standards at their 1980 level would lower substantially the proportion of education expenditure to Gross Domestic Product (GDP).

In fact there is a significant opportunity to improve the quality of education in the coming decade without raising the ratio of education expenditure to Gross Domestic Expenditure, or indeed even if this ratio were permitted to fall slightly. A reduced weight of education expenditure in government budgets is still consistent with educational improvement. Indeed, staffing standards showed great improvement in the 1970's and hence the eighties began with enlarged resources relative to 1970 (as discussed in Chapters one and two).

Existing pupil-teacher ratios in the various States indicate that if the Australian PTR were to be reduced to the lowest level applicable in any State, nine per cent (or 16,000) more teachers would be required. A range of arguments can be advanced for improved PTR's: for provision of specialist and administrative staff, reduced contact time, class size and school size reduction. The work by Glass et al. (1979) showing the importance of small class size is of relevance.

Teacher number projections are more likely to be in error than enrolment projections. On past experience errors in projection of teacher numbers of 2 per cent per annum or ten per cent over five years are not unlikely. Such an error, if it is an underestimate, is very significant for

teacher recruitment. For example, a two per cent error in total demand would represent a 33 per cent variation in recruitment, if recruitment otherwise equalled 6 per cent of the teacher stock in any one year. There is a grave danger in assuming that current appointment levels for new teachers will persist throughout the coming decade.

It is suggested that the expectation that it would be difficult to re-enter the teaching force after resignation has been a major factor in reducing wastage rates. There is also a significant correlation between female teacher wastage rates and unemployment. *If the general level of employment in the economy improves, some significant increase in wastage rates could be expected.* An apparently small increase in wastage and in the total number of teachers employed would have a major impact on recruitment, on teacher education and on opportunities for school leavers. Personnel problems and the management of facilities would be considerably eased, if increased recruitment were possible.

Because growth rates and resignation rates are uncertain it is *important that the speed of adjustment of teacher supply through teacher training be improved.* This might be achieved in part through end-on courses of professional training after an undergraduate degree. Also efforts could be made to have employers outside education and students recognise the general value of courses in teacher education.

The staffing formulas applicable to primary and secondary schools ensure that costs per student fall as school size increases, and vice versa. As decline in school size will be an important feature in the 1980s, the extent of that decline and the size distribution of schools within an urban area become important issues in influencing costs per student.

Costs per student over all schools will rise if:

- (a) there is a reduced dispersion in school size around the mean (or average);
- (b) there is reduced positive or increased negative skewness in the distribution of school size; and
- (c) there is a reduction in the average size of schools.

In the '980's reductions in the size of schools by as much as 20 per cent are quite probable. Such a reduction in the size of schools, for example, with the influence of (a) and (b) above held constant, will raise costs *per student* in primary schools by approximately four per cent, and in secondary schools by five per cent.

If closure and/or amalgamation of schools takes place not all potential savings may be realised particularly in a period of declining enrolments, and particularly if extensive consultations with staff and parents occur prior to closure. The greatest saving will occur where school closure enables land to be re-zoned and sold for commercial, or industrial, purposes, particularly in the larger cities of Sydney and Melbourne.

Lower resignation rates, lower promotion rates and better qualified teachers are causing incremental creep in the average salary paid to assistants. In Queensland the impact of "creep" on salary costs of assistants was 6.4 per cent over four years and in Victoria 8.4 per cent over a five-year period. This source of cost increase will continue in most States in the 1980s. It is largely uncontrollable except through policies which increase promotion rates or increase appointments of beginning teachers.

Summary of Recommendations

The following recommendations are summarised in the order in which they appear. This order should *not* be taken to indicate priorities.

1. Education Authorities should take up with their respective governments the proposition that where school property is sold, the gain from sale should be an accrual to the Education Budget without any automatic offsetting adjustment (Section 5.2). The school systems should be encouraged to make efficient use of their total resources, including property.
2. Before any school is closed, at least that school and the potential receiving school(s) should be de-zoned. Such an approach may clarify the situation considerably and reduce numbers to the extent that closure becomes a more acceptable alternative (Section 5.2).

3. Should any system contemplate the establishment of secondary colleges, or multi-campus schools, a working party, with teacher union representation, should be set up to consider and report on the detailed arrangements that would be necessary. Such a report should set out in detail probable costings, and consider the desirability of establishing a pilot scheme in a particular area to assess more accurately costs, administrative problems in staffing, teacher attitudes and any impact on retention rates (Sections 5.4 and 5.10).
4. All education systems which have not already done so, should move to dezone schools, particularly secondary schools, on a system wide basis, to the extent practicable and as an immediate measure (Section 5.5).
5. Education Authorities should encourage neighbouring schools, particularly in areas where enrolments are declining and the range of curriculum offered is under pressure, to co-operate in the establishment of joint classes and joint use of facilities (Section 5.6).
6. Co-operating secondary schools should be assisted to extend co-operation further even to the stage that one (or more) school evolves into a junior high while the other develops towards a secondary college (Section 5.6).
7. Consideration should be given to the establishment of special-interest sub-schools within ordinary high schools as a means of achieving educational objectives for certain groups of talented students (Section 5.9).
8. The S.A. innovation of allowing those who retire between ages 55 - 60 to obtain up to 2 days per week of relief teaching, should be considered by other systems if it has an impact on rates of early retirement (Section 6.2).
9. If superannuation schemes are to be improved in any State, legislative amendment to be given priority; even if initially early retirement applies only for those professions where there is a surplus supply of potential employees (Section 6.2).
10. On grounds of equity to those unemployed, and those waiting for promotion, and on grounds of economy in the management of the budget of each State, restrictions should be placed on any further accumulation on long-service leave (Section 6.3).

11. Those who have accumulated excessive long-service leave should be required to reduce accumulated leave to no more than 3-4 months by the end of five years, and no more than 1 month by the end of ten years (Section 6.3).
12. Standards should be set as to the extent of future accumulation of long-service leave (Section 6.3).
13. Education Authorities should approach governments to secure funds necessary to implement recommendations 11 and 12 (Section 6.3).
14. Those in promotion positions should be the first group required to take long service leave if funds initially are insufficient to apply a common policy across the service (Section 6.3).
15. Leave without pay standards should be improved so long as the number seeking leave each year can be maintained at a steady flow (Section 6.4).
16. All governments should re-examine policies with respect to the numbers of administrative and advisory personnel that are employed, so that there is an appropriate relationship to the tasks required to be performed, particularly during periods when the problems of changing enrolments intensify administrative workloads (Section 6.5).
17. Inter-system mobility of teachers should be encouraged by the A.E.C. following up its earlier work on this matter (Section 6.6).
18. Education Authorities should encourage the further development of part-time employment among teachers (Section 6.7).
19. All Education Authorities should review alternative study leave and scholarship programmes for teachers keeping in mind the issues raised in the Auchmuty Report and the need to maintain appropriate staffing standards and flexibility in schools (Section 6.8).
20. Part-time study leave options be expanded in those instances in which there is a requirement of education authorities for additional human resources for administrative, research and planning, and curriculum purposes (Section 6.8).
21. Concerns both for flexibility and for the new generation of teachers imply that Education Authorities should continue to assist with arrangements for contract appointments. In exploring and reviewing alternative contract arrangements, Authorities should recognise issues in industrial relations, be seen to encourage professionalism within the teaching force, and once circumstances permit to offer subsequent permanent employment when an appropriate professional standard of teaching has been demonstrated (Section 6.9).

APPENDIX A
THE SIZE OF PRIMARY AND SECONDARY SCHOOLS

A1. Metropolitan Adelaide Government Secondary Schools

Table A1.1 summarises the distribution of Adelaide's Government Secondary Schools in each of the years 1971, 1976, 1979 and 1980. Over the ten year period, ten new high schools were opened, but six pairs of single sex high schools (and a seventh pair at the beginning of 1971) were amalgamated into co-educational high schools. Of the seven pairs of schools, six had previously been Technical high schools - the amalgamations were part of a move towards comprehensiveness as well as co-education. The ten-year period saw a significant reduction in the number of very large schools, and, largely because of the amalgamations, a reduction also in the number of small schools.

Table A1.1
Metropolitan Adelaide Government Secondary Schools

			201-	401-	601-	801-	1001-	1201-	1400+
	Total	<200	400	600	800	1000	1200	1400	
1971	59	2	7	12	11	6	6	6	9
1976	64	2	7	7	13	8	15	10	2
1979	62	1	4	8	16	16	12	4	1
1980	63	1	6	8	15	15	13	4	1

Source: S.A. Education Department.

Table A1.2 sets out more information and provides total enrolments by region and the mean enrolment by region (shown in brackets). It should be noted that the mean size of schools in metropolitan Adelaide has declined by six per cent from 1976 to 1980, after remaining relatively constant from 1971 to 1976. However the pattern by region is not uniform. For example, in the South-western suburbs, which were settled in the 1950's and 1960's and where the main enrolment bulge had passed through all the secondary schools by 1976,

there was a 15.8 per cent decline in the average size of schools. That decline was in fact the percentage decline in enrolments as there was no change in the number of schools.

Table A1.2
Enrolments in Adelaide Government Secondary Schools
(Average School Size in brackets)

	1971	1976	1979	1980
1. Elizabeth-Salisbury	7,870 (874)	9,199(864)	9,055 (823)	8,872(807)
2. North & North East	7,782 (865)	9,247(841)	9,411 (856)	9,341(849)
3. West & North-West	13,062 (816)	12,388(826)	10,883 (777)	10,290(735)
4. South West	9,614 (961)	9,665(967)	8,567 (857)	8,136(814)
5. Christies-Morphett Vale	1,409(1409)	2,794(931)	3,368(1123)	3,594(899)
6. East & South-East	10,519 (751)	11,090(792)	10,614 (816)	10,409(801)
	50,256(852)	54,683(854)	51,898 (837)	50,642(804)
Mean	852	854	837	804
Median	771	884.5	871	817
Standard Deviation (SD)	433.5	365.8	274.4	287.4
Q3	1,255	1,134	1,024	1,011
Q1	498	603.5	654	624
Quartile Skewness	+0.28	-0.06	-0.17	0
% of Schools within 1 SD of mean	61	67.2	66.1	68.3
% of Schools within 2 SD of mean	98.3	95.3	96.8	96.8
Index of cost per student for School of mean size (1980=100)	98.3	98.3	98.8	100
Index of actual cost per student for all Schools (School of size 804=100)	97.0	97.3	98.3	98.5

Source: S.A. Education Department.

The remainder of Table A1.2 seeks to describe the character of the distribution of school sizes and provides some information on costs. The last two lines of the table provide first an index of costs for a school of mean size in each year (804 = 100), assuming that the 1980 staffing formula and salary rates applied in each of the previous years. On the same assumption, the actual costs for all schools were calculated and converted to a total cost per student for all schools in each year. This figure was converted to an index (shown in the last line of the Table) on the basis that the cost per student, calculated from the staffing formula, for a school of 804 was equal to 100. For example, the actual cost index of 98.3 in 1979 implies that, although the mean size of school was 837, on average, actual costs per student were typical of a school enrolment of 853, and in 1980, the actual cost index of 98.5 implied that costs per student, on average, were typical of a school enrolment of 848 even though the mean size was 804. There was a significant reduction in dispersion from 1971 to 1979, with a small increase in 1980. Similarly, from 1971 to 1979 there was a strong movement from positive to negative skewness, with a reversal from 1979 to 1980. As a result the index of costs moved from 97.0 to 98.3 from 1971 to 1979 when the index of costs for a school of mean size increased from 98.3 to 98.8. On the other hand, from 1979 to 1980 the reduction in mean size of school from 837 to 804 would have been sufficient on its own to raise the cost index per student from 98.8 to 100, but because of greater dispersion the actual cost index rose only from 98.3 to 98.5.

It is a matter of some interest, in this connection, that in 1980 South Australian secondary schools were dezoned. As a consequence some 31 per cent of first year students chose a school other than the neighbourhood school. Only 2 per cent of students failed to achieve their first choice. In 1980, the dezoning arrangements, together with the pre-existing geographical trends in enrolments were responsible for the increased dispersion and the elimination of the 1979 negative skewness. It is also a matter of some statistical interest that the 1980 distribution of school size almost exactly mirrors a normal distribution. Preliminary information on the likely selections of school by prospective 1981 first-year students suggests that some of the 1980 trends may be reversed.

A1.1 Amalgamation

The amalgamation of schools during the 1970's is a matter of considerable relevance. Without these changes there would have been 70 schools in 1980 with a mean size of 723 and an index of staffing costs (at the mean size) of 102.4. From 1971 to 1979, the actual increase in costs per student due to change in school size was 1.55 per cent (from 97.0 to 98.5). Without the amalgamations the increase would have been at least 4 per cent.

As amalgamation is a policy option which is considered in detail in the body of this report, it may be as well here to set out an account of what occurred and some explanation of why it took place so easily. For some years prior to the early 1970's there had been a growing problem with a number of the technical high schools in South Australia. While each school had a broad base of craft, or technical subjects available, the lack of any system of student selection resulted in a growing requirement for matriculation courses. Following the introduction of such courses the tendency for a serious decline in enrolments in technical high schools continued, particularly because of a perceived and an actual bias by employers in providing jobs for students from such schools.

The changing social attitudes of that time also produced a very strong pressure from staff and students in some of the girls schools towards co-education. From an organisational point of view if amalgamations could occur effectively and boost enrolments, then pressure on neighbouring overcrowded schools could be lessened. At the same time, there existed a general consensus for a move towards co-education and comprehensiveness, supported both on educational and social grounds. The community perception that there were sound reasons for amalgamation, and that amalgamation would lead to improved facilities and educational opportunity, minimised any possible opposition. At the same time, displaced Principals and/or Deputies were readily relocatable because of some continuing increase in the number of schools and a few critical retirements on grounds of age and ill-health. A further favourable circumstance was that in each case the pairs of schools to be amalgamated were either adjoining or relatively close to each other.

It is an open question whether such amalgamations, if deferred, would be as readily achievable in the 1980's. The likely regime of declining enrolments, and the consequential staff redundancies may have resulted in the amalgamations being impracticable.

A2. Metropolitan Brisbane Government Secondary Schools

Table A2.1 shows the distribution of Government secondary schools in Brisbane by size for each of the years 1971, 1975 and 1980, while Table A2.2 provides enrolments on a regional basis and provides statistical information on the distribution of school sizes. In contrast with Adelaide, 1971-75 was a period of rapid growth. Further, while the growth rate moderated from 1975 to 1980, enrolments have yet to peak. However, there is clear evidence that the school building programme is catching up and the 1975-80 period saw a 10 per cent decline in the mean size of schools. While costs have not been analysed, that reduction would be sufficient to cause a two to four per cent increase in costs per student. Furthermore, secondary enrolments are now declining in the Brisbane North and Brisbane West regions with the Southern region still expanding significantly. The rapid expansion from 1971-75 is evidence of a bulge in enrolments passing through the school system, and of potential future problems should enrolments in metropolitan Brisbane decline in the 1980's. Not only will costs per student continue to rise, but with low wastage rates, more frequent transfers of staff from Brisbane to other parts of Queensland may become necessary.

Table A2.1
Metropolitan Brisbane Government Secondary Schools

	Total	<200	201- 400	401- 600	601- 800	801- 1,000	1,001- 1,001	1,200- 1,400	1,400+
1971	40	1	3	1	6	12	8	5	4
1975	43	1	1	2	5	12	7	10	5
1980	49	1	2	5	8	10	13	7	3

Source: Queensland Education Department.

Table A2.2
Enrolments in Brisbane Government Secondary Schools
(Average School Size in brackets)

	1971	1975	1980
1. Brisbane North	13,814 (987)	16,285(1,086)	16,125(949)
2. Brisbane West	12,591 (899)	13,608 (972)	12,369(884)
3. Brisbane South	12,161(1,013)	14,966(1,069)	17,433(969)
	38,566 (964)	44,859(1,043)	45,927(937)
Mean	964	1,043	937
Median	954.5	1,016	950
Standard Deviation (SD)	360.5	342.6	334.9
Q3	1,143.5	1,221	1,180.5
Q1	798		680.5
Quartile Skewness	+0.09	+0.19	-0.08
% of Schools within 1 SD of mean	72.4	74.4	65.3
% of Schools within 2 SD of mean	92.5	95.3	93.9

Source: Queensland Education Department.

A3. Government Primary Schools in the A.C.T.

Tables A3.1 and A3.2 set out the equivalent information as explained above for government primary schools in the A.C.T. for each of the years 1971, 1973, 1976 and 1980. The results are quite startling. Growth of 6 per cent per annum from 1971-73 accelerated slightly to 6.5 per cent per annum from 1973-76. The growth rate then fell sharply to 0.8 per cent per annum from 1976-80, and it is likely that an actual decline will shortly be experienced.

Table A3.1
ACT Government Primary Schools

	Total	0-100	101- 200	201- 300	301- 400	401- 500	501- 600	601- 700	701- 800	800+
1971	35	3	1	0	2	12	5	8	2	2
1973	43	3	0	2	4	16	11	6	1	0
1976	54	3	2	2	9	19	14	3	2	0
1980	62	3	4	7	18	13	13	0	4	0

Source: A.C.T. Schools Authority.

The whole period was associated with a sharp increase in the number of schools, so that while total enrolments rose by 38.5 per cent from 1971-1980 there was a 21.8 per cent decline in the mean size of schools. If costs per student moved with the mean size of schools, the change in the size of school was responsible alone for a 4.2 per cent increase in costs per student. However, the reduced dispersion when 1980 is compared with 1971 imply that costs per student increased by significantly more than 4.2 per cent simply because of change in the size-distribution of schools.

Table A3.2

Enrolments in ACT Government Primary Schools
(Average School Size in brackets)

	1971	1973	1976	1980
1. Northside	5,600(700)	4,738(592)	3,638(455)	2,504(313)
2. Southside	2,955(591)	2,427(485)	1,947(389)	1,652(330)
3. Woden Valley	5,039(504)	5,140(514)	4,926(493)	3,610(361)
4. Weston Creek	1,065(532.5)	2,730(455)	3,734(533)	3,717(531)
5. Belconnen	2,718(543)	4,413(441)	7,872(492)	9,791(466)
6. Tuggeranong	-	-	1,255(314)	2,825(471)
7. Rural	294(73.5)	350(87.5)	309 (77)	337 (84)
	17,671(505)	19,798(460)	23,681(439)	24,472(395)
Mean	505	460	439	395
Median	498	478	479.5	394.5
Standard Deviation				
SD	196	152	154	157.9
Q3	638	534	538.5	502.5
Q1	454	417	361.5	306.5
Quartile Skewness	+0.52	-0.04	-0.33	+0.10
% of Schools				
within 1 SD				
of mean	77.1	76.7	79.6	74.2
% of Schools				
within 2 SD				
of mean	91.4	90.7	92.6	91.9
Index of staffing				
cost per student				
for School of				
mean size				
(1980=100)	96.0	96.9	97.7	100

Source: A.C.T. Schools Authority.

The regional pattern within the A.C.T. showed Australian urban development at its most dramatic in terms of the impact on size of school. While significant growth occurred in other areas, primary school enrolments in Northside, Southside and Woden Valley almost halved from 13,594 in 1971 to 7,766 in 1980. As the same 23 primary schools were maintained in these established suburbs, the decline in size of school matched the decline in enrolments.

On the other hand, enrolments in Weston Creek, Belconnen and Tuggeranong increased from 3,783 to 16,333 over the decade. The number of schools expanded from 8 to 34 and the size remained relatively constant. For the A.C.T. as a whole, a continuation of current policies (with minimal net migration from the States) could cause a massive staffing problem unless resignation rates rise dramatically. And declining school size will continue to raise costs per student and aggravate the mounting budgetary pressure.

A4. Metropolitan Hobart Primary Schools

Tables A4.1 and A4.2 show that over the ten year period 1970-80, there was a 5.4 per cent reduction in enrolments, and a 20.4 per cent decline in the average size of school. The reduction in average size was accompanied by less dispersion (and particularly in the latter half of the decade by a significant increase in positive skewness). If the Tasmanian cost picture is similar to other states the Hobart situation suggests a four to five per cent rise in costs per student occurring because of reduced school size.

Table A4.1
Hobart Government Primary Schools

	Total	0-100	101-200	201-300	301-400	401-500	501-600	601-700	701-800	801+
1970	37	3	5	6	9	5	3	2	1	3
1975	40	0	9	8	12	2	4	1	2	2
1980	44	5	9	9	8	6	5	2	0	0

Source: Tasmanian Education Department.

Table A4.2
Enrolments in Hobart Government Primary Schools

	1970	1975	1980
Hobart Area	14,361	14,350	13,586
No. of Schools	37	40	44
Mean	388	359	309
Median	350	322	264
Q3	495.5	409	462
Q1	214	236	170
Standard Deviation (SD)	241	184	165
Quartile Skewness	+0.034	+0.006	+0.356
% of Schools within 1 SD of mean	70.3	75	70.5
% of Schools within 2 SD of mean	94.6	95	95.5

Source: Tasmanian Education Department.

APPENDIX B
PROBLEMS OF ENROLMENT DECLINE AND ALTERNATIVE POLICY OPTIONS:
A CASE STUDY

B1. Introduction

In most school systems within Australia, changing patterns of enrolments in the 1980's will be characterised by a growing incidence of schools experiencing sustained enrolment decline. The purpose of this Appendix is to illustrate the major problems of enrolment decline for three neighbouring secondary schools and to identify a range of options for solving these problems. The three schools are situated in Victoria.

Three major problems are discussed - the problem of providing an adequate curriculum, the problem of reducing the number of teachers, and the problem of surplus classroom space. A range of policy options concerning the location and grouping of students, the management of teaching staff and the management of facilities is then outlined in order to demonstrate that the solution of these problems is no easy task.

B2. Problems of Enrolment Decline

B2.1 Assumptions

The enrolment patterns (actual for 5 years and projected for 5 years) of three un-named neighbouring secondary schools are the subject of this case study. No change has been made to these enrolment patterns although they have been assumed to begin in 1980 in order to bring the reader's attention to the commencement of the decline process. Each school is assumed to provide co-education and to be moving into a period of enrolment decline.

Table B2.1 provides enrolment projections in the 1980's for each of the schools. School X is expected to lose 46% of its 1980 enrolment by 1989, school Y 30%, and school Z 31%. In all, the three schools are to lose almost 900 students in 9 years - a 36% decline.

Table B2.1

Case A - Projected Enrolments

<u>Year</u>	<u>School X</u>	<u>School Y</u>	<u>School Z</u>	<u>Total</u>
1980 (Actual)	824	896	712	2,432
1981	816	873	703	2,392
1982	752	869	684	2,305
1983	676	813	638	2,127
1984	637	754	634	2,025
1985	598	709	593	1,900
1986	548	679	556	1,783
1987	516	666	536	1,718
1988	480	652	519	1,651
1989	441	628	491	1,560

This aggregate picture of decline masks the uneven distribution of that decline, which is set out in Tables B2.2-B2.7.

Table B2.2

Projected Enrolments in School X

<u>Year</u>	<u>Year 7</u>	<u>Year 8</u>	<u>Year 9</u>	<u>Year 10</u>	<u>Year 11</u>	<u>Year 12</u>	<u>Total</u>
1980 (Actual)	159	152	149	155	111	98	824
1981	127	163	149	132	130	115	816
1982	122	125	152	130	125	98	752
1983	134	115	108	124	112	83	676
1984	97	129	120	108	104	79	637
1985	101	95	125	110	91	76	598
1986	89	98	91	112	94	64	548
1987	91	86	94	83	96	66	516
1988	84	88	84	86	70	68	480
1989	78	81	84	76	73	49	441

Table B2.3
Projected Enrolments in School Y

<u>Year</u>	<u>Year 7</u>	<u>Year 8</u>	<u>Year 9</u>	<u>Year 10</u>	<u>Year 11</u>	<u>Year 12</u>	<u>Total</u>
1980 (Actual)	137	174	161	161	147	116	896
1981	158	146	162	154	156	97	873
1982	131	158	150	170	154	106	869
1983	143	133	147	141	161	88	813
1984	127	143	130	129	128	97	754
1985	124	129	139	122	119	76	709
1986	112	124	126	131	114	72	679
1987	128	113	120	117	121	67	666
1988	124	128	110	110	108	72	652
1989	110	124	124	102	103	65	628

Table B2.4
Projected Enrolments in School Z

<u>Year</u>	<u>Y 7</u>	<u>Y 8</u>	<u>Y 9</u>	<u>Y 10</u>	<u>Y 11</u>	<u>Y 12</u>	<u>Total</u>
1980 (Actual)	145	146	106	141	98	76	712
1981	128	137	139	115	124	60	703
1982	117	126	131	129	97	84	684
1983	110	121	112	124	117	54	638
1984	107	109	115	113	111	79	634
1985	106	106	102	114	98	67	593
1986	94	105	99	98	99	61	556
1987	100	94	98	97	86	61	536
1988	97	100	88	96	84	54	519
1989	78	97	94	86	84	52	491

Table B2.5

Projected Decline in Enrolments by Level - School X
 ("+" denotes an increase in enrolments)

<u>Years</u>	<u>Year 7</u>	<u>Year 8</u>	<u>Year 9</u>	<u>Year 10</u>	<u>Year 11</u>	<u>Year 12</u>	<u>Total</u>
1980-81	32	+11	-	23	+19	+17	8
1981-82	5	38	+ 3	2	5	17	64
1982-83	+12	10	44	6	13	15	76
1983-84	37	+14	+12	16	8	4	39
1984-85	+ 4	34	+ 5	+ 2	13	3	39
1985-86	12	+ 3	34	+ 2	+ 3	12	50
1986-87	+ 2	12	+ 3	29	+ 2	+ 2	32
1987-88	7	+ 2	10	+ 3	26	+ 2	36
1988-89	6	7	-	10	+ 3	19	39

Table B2.6

Projected Decline in Enrolments by Level - School Y
 ("+" denotes an increase in enrolment)

<u>Years</u>	<u>Year 7</u>	<u>Year 8</u>	<u>Year 9</u>	<u>Year 10</u>	<u>Year 11</u>	<u>Year 12</u>	<u>Total</u>
1980-81	+21	28	+ 1	7	+ 9	19	23
1981-82	27	+12	12	+16	2	+ 9	4
1982-83	+12	25	3	29	+ 7	18	56
1983-84	16	+10	17	12	33	+ 9	59
1984-85	3	14	+ 9	7	9	21	45
1985-86	12	5	13	+ 9	5	4	30
1986-87	+16	11	6	14	+ 7	5	13
1987-88	4	+15	10	7	13	+ 5	14
1988-89	14	4	+14	8	5	7	24

Table B2.7
Projected Decline in Enrolments by Level - School 2

<u>Years</u>	<u>Year 7</u>	<u>Year 8</u>	<u>Year 9</u>	<u>Year 10</u>	<u>Year 11</u>	<u>Year 12</u>	<u>Total</u>
1980-81	17	9	+33	26	+26	16	9
1981-82	11	11	8	+14	27	+24	19
1982-83	7	5	19	5	+20	30	46
1983-84	3	12	+ 3	11	6	+25	4
1984-85	1	3	13	+ 1	13	12	41
1985-86	12	1	3	16	+ 1	6	37
1986-87	+ 6	11	1	1	13	-	20
1987-88	3	+ 6	10	1	2	7	17
1988-89	19	3	+ 6	10	-	2	28

Some features of the enrolment decline presented in Tables B2.2-B2.7 are worth noting. Firstly, the schools experience different patterns over time, as is evident in Tables B2.5-B2.7. And secondly, for each school there are cases of growth within the context of total decline.

What, then, will be the consequences of such changes in enrolments in these three schools? For the purposes of answering this question, the following policies are assumed:

- (a) teaching staff are centrally allocated according to an enrolment-based formula, whereby 26 full-time teachers are allocated for 300 student enrolments and an additional full-time teacher is allocated for every additional 18 students;
- (b) a school week is 26 hours and 40 minutes (5 hours and 20 minutes per day), and a full-time teacher can have class teaching duties of no more than 17 hours and 30 minutes per week (i.e. average 3 hours and 30 minutes per day);
- (c) capital facilities are centrally determined and provided;
- (d) the school governing body and the principal determine the range of curriculum offerings; and
- (e) there are no school fees, although grants are made to school governing bodies for non-staff expenditures.

Since teaching staff are allocated according to an enrolment-based formula, the immediate impact of enrolment decline is to reduce a school's teaching staff. Table B2.8 provides details of each school's projected teaching staff entitlement for the 1980's. Each school is to experience some loss of teaching staff in almost every year, and these losses are unevenly distributed over the years.

Table B2.8
Full-Time Teaching Staff Allocations to the Three Schools
(Teacher reduction on the previous year in brackets)

<u>Year</u>	<u>School X</u>	<u>School Y</u>	<u>School Z</u>	<u>Total</u>
1980 (Actual)	55	59	48	162
1981	54 (1)	57 (2)	48 (-)	159 (3)
1982	51 (3)	57 (-)	47 (-)	155 (4)
1983	46 (5)	54 (3)	44 (3)	144 (11)
1984	44 (2)	51 (3)	44 (-)	139 (5)
1985	42 (2)	48 (3)	42 (2)	132 (7)
1986	39 (3)	47 (1)	40 (2)	126 (6)
1987	38 (1)	46 (1)	39 (1)	123 (3)
1988	36 (2)	45 (1)	38 (1)	119 (4)
1989	33 (3)	44 (1)	36 (2)	113 (6)

Continual reduction in teaching staff gives rise to three problems:

- (i) deciding on student groupings and curriculum offerings;
- (ii) deciding which teachers (and, therefore, which learning experiences) are to be withdrawn from the school;
- (iii) deciding on what to do with unused classroom space.

These three problems are discussed below.

B2.2 The Problem of Providing an Adequate Curriculum

In every year of the case study, each school experiencing decline will have to match its reduced teacher number with reduced, although unevenly distributed, enrolments. An attempt has been made to do this for each school in the study under certain assumptions, namely;

- (a) that there is no shortage of capital facilities in each of the schools, with schools X and Y having 40 classrooms each and school Z having 33 classrooms;
- (b) that school X works to a 6 period (50 minute per period) day, school Y to a 7 period (45 minutes per period) day, and school Z to an 8 period (40 minutes per period) day;
- (c) that each school requires the equivalent of 4 full-time teaching staff for non-teaching duties (this covers co-ordination of subjects, timetabling, first-year teacher time out-of-class, etc.);
- (d) that average class size should be no more than 27 students, where possible.

Tables B2.9-B2.11 provide details of a possible arrangement of classes in each school to match total staff availability, given the above assumptions. In general, it proved possible to keep average class sizes below the desired maximum.

Table B2.9

Distribution of Enrolments by Class Groups and Resource Requirements
-School X

Note: Enrolment distribution is expressed in terms of (a x b) where "a" denotes the average number of classes operating at any time and "b" denotes the average class size (rounded to the next highest integer value) given by dividing enrolment numbers by "a".

<u>Year</u>	<u>Y 7</u>	<u>Y 8</u>	<u>Y 9</u>	<u>Y 10</u>	<u>Y 11</u>	<u>Y 12</u>	Average Number of Classrooms Required at any Time	Average Number of Teachers Required at any Time
1980 (Actual)	7x23	7x22	7x22	7x23	5x23	5x20	38	54.2
1981	6x22	7x24	7x22	6x22	6x22	5x23	37	52.9
1982	6x21	6x21	7x22	6x22	5x25	5x20	35	50.0
1983	6x23	5x23	6x18	6x21	5x23	4x21	32	45.7
1984	5x20	5x26	6x20	5x22	5x21	4x20	30	42.9
1985	5x21	4x24	6x21	5x22	5x19	4x19	29	41.4
1986	4x23	4x25	5x19	5x23	5x19	4x16	27	38.6
1987	4x23	4x22	5x19	4x21	5x20	4x17	26	37.1
1988	4x21	4x22	4x21	4x22	5x14	4x17	25	35.7
1989	4x20	4x21	4x21	4x19	4x19	3x17	23	32.9

Table B2.10

Distribution of Enrolments by Class Groups and Resource Requirements
-School Y

(Note: see note to Table B2.9)

<u>Year</u>	<u>Y 7</u>	<u>Y 8</u>	<u>Y 9</u>	<u>Y 10</u>	<u>Y 11</u>	<u>Y 12</u>	Average Number of Classrooms at any Time	Average Number of Teachers at any Time
1980 (Actual)	6x23	8x22	7x23	7x23	6x25	5x24	39	58.5
1981	6x27	7x21	7x24	7x22	6x26	5x20	38	57.0
1982	6x22	7x23	7x22	7x25	6x26	5x21	38	57.0
1983	6x24	6x23	6x25	6x24	7x23	5x19	36	54.0
1984	6x22	6x24	6x22	5x26	6x22	5x20	34	51.0
1985	6x21	6x22	6x24	5x25	5x24	4x19	32	48.0
1986	6x19	6x21	5x26	5x27	5x23	4x18	31	46.5
1987	6x22	5x23	5x24	5x24	5x25	4x17	30	45.0
1988	6x21	5x26	5x22	5x22	5x22	4x18	30	45.0
1989	5x22	5x25	5x25	5x21	5x21	4x17	29	43.5

Table B2.11
Distribution of Enrolments by Class Groups and Resource Requirements
-School Z
(Note: see note to Table B2.9)

<u>Year</u>	<u>Y 7</u>	<u>Y 8</u>	<u>Y 9</u>	<u>Y 10</u>	<u>Y 11</u>	<u>Y 12</u>	Average Number of Classrooms Required at any Time	Average Number of Teachers Required at any Time
1980 (Actual)	6x25	6x26	4x27	6x24	5x20	4x19	31	47.2
1981	5x26	6x23	6x24	5x23	5x25	4x15	31	47.2
1982	5x24	5x26	6x22	5x26	5x20	4x21	30	45.7
1983	5x22	5x25	5x23	5x25	5x24	3x18	28	42.7
1984	5x22	5x22	5x23	5x23	5x23	3x27	28	42.7
1985	4x27	5x22	5x21	5x23	5x20	3x23	27	41.1
1986	4x24	5x21	5x20	4x25	5x20	3x21	26	39.6
1987	4x25	4x24	5x20	4x25	5x18	3x21	25	38.1
1988	4x25	4x25	4x22	4x24	5x17	3x18	24	36.6
1989	4x20	4x25	4x24	4x22	4x21	3x18	23	35.1

Further, there need not be any reduction in the curriculum offered to students in Years 7-10 provided the appropriately qualified staff are available. Staff reduction, here, is one of scale, i.e., the reduction is in the number of teachers with the same teaching specialisations.

However, it will be a different story for students in Years 11 and 12 (especially Year 12) as the reduction in numbers has reduced the average number of classes operating at any time. For example, school X, working to a 6 period day, will have to reduce Year 12 classes from an average 5 at any time in 1980 to an average 3 at any time in 1989. This means that the subjects offered will have to be timetabled into 18 rather than 30 periods in a day. Therefore, timetabling to ensure that each senior student can take the

subjects of his choice will be much more difficult and, perhaps, even impossible in some circumstances.

Beside the subject choice of students, other curriculum problems could arise from an enrolment decline. The Interim Report of the Commission on Declining School Enrolments in Ontario gives a long list of such possibilities. A selection of these is given below to indicate the scope of problems of curriculum in a decline situation.

(1) Goals and Objectives

- * extra attention for students' individual differences may be lost
- * fewer courses may be offered

(2) Curriculum Development

- * transfer of teachers may result in curriculum development plans not being carried out
- * a lowering of teacher morale may result in reduced co-operation and increased defensiveness concerning curriculum implementation
- * there may be a lack of funds for training in curriculum evaluation
- * there may be more centralised development of curriculum

(3) Programs and Courses

- * programs such as music, art, and family studies may be discontinued
- * field trips may be curtailed
- * there may be increased bussing of students to provide access to programs
- * fewer new courses and options may be implemented

(4) Classroom Instructional Environment

- * an increase in the number of split grades could have a negative effect on teacher morale
- * knowing that teachers will have to be declared redundant could affect morale

(5) Curriculum Support Services

- * consulting staffs may be drastically reduced
- * resource staff may become an expensive luxury

B2.3 The Problem of Teacher Reduction

In reducing the number of teachers at a school, it would be fortuitous if resignations/retirements from the school matched the required reduction in numbers and curriculum offerings. Consequently, school management has to decide which teachers should be transferred. What, then, should be the criteria for transferring teachers from schools with declining enrolments? And, who is to decide on these transfers? Failure to respond adequately to these questions is likely to induce teacher resentment and unrest - an undesirable development for many reasons, but particularly because of its impact upon the morale of education's most important resource and, in turn, upon the quality of the curriculum.

Two types of teacher withdrawal from a school with declining enrolments should be distinguished; the withdrawal of teachers due to a reduction in scale (so that the same curriculum is offered, but to fewer classes) and the withdrawal of teachers causing a reduction in the range of curriculum options. Besides possible morale effects, the latter type of teacher withdrawal may also reduce the quality of the total curriculum provided.

The problem is further complicated by the uncertainty of the next year's enrolment numbers. This raises the question of when should staff reductions be decided - before the year commences or during the relevant year.

Briault and Smith in their study of declining enrolments in secondary schools in England highlight a special aspect of the problem of teacher reduction; namely, the role of the school principal and his or her conflicts of loyalty. Is the head's primary responsibility upwards towards his authority or downwards towards his school? "Few would disagree with the view that his responsibility is for his school and that in fulfilling this, he fulfils his duty to his employer. He may have to accept increasingly severe constraints on the resources for his school. Is he right to battle for special treatment which may be, in the end must be, at the expense of other schools? How far has he a responsibility to his employing authority to see that his

colleagues are at least aware of the wider context, financial as well as educational? ... How can he best serve the interests of his pupils? Within the school is his first concern to be the curriculum or the teachers? Without the support of his colleagues arising from their feeling that their professional interests are being regarded, morale will fall, the quality of teaching will suffer and pupils will be disadvantaged," (Briault and Smith, 1980).

B2.4 The Problem of Surplus Classroom Space

As the number of teachers declines, the requirements for classroom space declines. For example, in the case above, School X's requirement for classrooms will reduce by 13 between 1980 and 1989, School Y by 10, and School Z by 8 (see Tables B2.9-B2.11). In nine years, 31 fewer classrooms will be necessary. What is to be done with this surplus space? How is the use of increasing surplus space to be decided? What procedures and criteria are appropriate?

It should be noted that the assumption in the case study assumes an initial situation of sufficient capital facilities. If this were not so, then the surplus space created by decline could immediately be utilized to better accommodate enrolments and to provide a wider curriculum. Briault and Smith point out some of the following advantages identified in their study in such a situation where declining enrolments have reduced the pressures of overcrowding:-

- (a) it becomes easier to manage students with
 - * fewer pupils moving through corridors, thus reducing discipline problems
 - * more play-space per pupil (especially where portable classrooms are removed), thus reducing accidents in the playground;
- (b) it provides opportunities for more satisfactory use of rooms -
 - * more can be done to give subject departments two or more rooms in closer proximity, thus enhancing the possibilities of co-operative teaching
 - * more can be done to give a department more or less exclusive use of a given room
 - * more rooms are available for small groups, thus enabling them to spread out and to display their work;
- (c) it permits greater flexibility in timetabling; and

- (d) it produces less wear and tear on some specialist rooms which are under-used as well as making it easier to arrange for necessary repairs and alterations.

But while there are advantages in having surplus space, there is a limit to the extent to which this can be sustained in a situation where space is in short supply elsewhere.

B3. A Brief Look at Alternative Policy Responses

B3.1. Options Concerning the Regrouping of Students

Option 1 *Restructure schooling into junior high (years 7-10) and senior high (years 11 and 12) schools.*

Senior student enrolments (years 11 and 12) of the three schools X, Y and Z of the case study are projected to decline from 682 in 1981 to 426 in 1989 (see Table B3.1). If, from 1981, School Z were to be a senior high school, then Schools X and Y would be capable of accommodating the total year 7-10 enrolments of the three schools over the 1980's (see Table B3.2). The major advantage of such a reorganisation would be to ensure that an acceptable range of curriculum options is offered to all senior students. Other advantages, usually associated with senior schools, could be argued.

However, this option offers no solution to the staffing problems defined above as long as teaching staff continue to be determined by enrolment numbers. Neither does this option provide a solution to increasing surplus classroom space. Other problems would include student travel to their new schools, ensuring curriculum continuity between the junior and senior schools, and transition costs from the present structure.

Option 2 *Restructure schooling into schools for years 7-11 and year 12 only schools.*

A variation of Option 1 would be to form a senior school for Year 12 students only. But accommodation problems are likely to arise. For example, in the case study above the enrolment of the senior school would be 272 in 1981 and falling to 166 in 1989 - thus acquiring the problems of a small school. Year 7-11 schools would have to accommodate an average 1060 students in 1981 and 697 in 1989. Without additional classrooms, this would not be possible until the mid-'eighties.

Table B3.1
Projected Total Senior Student (Years 11 and 12) Enrolments
of Schools X, Y and Z

<u>Year</u>	<u>Year 11</u>	<u>Year 12</u>	<u>Total</u>	<u>Staff Entitlement</u>
1981	410	272	682	47
1982	376	288	664	46
1983	390	225	615	43
1984	343	255	598	42
1985	308	219	527	38
1986	307	197	504	37
1987	303	194	497	36
1988	262	194	456	34
1989	260	166	426	33

Table B3.2
Projected Years 7-10 Enrolments of Schools X, Y and Z

<u>Year</u>	<u>Total Enrolment</u>	<u>Half Total Enrolment</u>	<u>Staff Entitlement for Half Total Enrolment</u>
1981	1710	855	56
1982	1641	821	54
1983	1512	756	51
1984	1427	714	49
1985	1373	687	47
1986	1279	640	44
1987	1221	611	43
1988	1195	598	42
1989	1134	567	40

Option 3 *Zoning of school attendances.*

Where zoning of students to distinct schools exists together with declining enrolments, removal of such zoning restrictions could have the advantage of attracting students from other areas to maintain enrolment levels. If such additional students are drawn from districts with student

overcrowding, a better distribution will have been affected. However, if they are drawn from another school in a decline situation, the problem is simply transferred, although, in so doing, the schools which are the prime candidates for closure will have been identified by parental and student choice rather than by bureaucratic procedures. In addition, the direction given by these preferences will induce schools to respond more closely to the needs of the communities being served. A number of specialist schools would likely develop in time, thus widening choice as well as improving standards.

On the other hand, some may fear that the release of unbridled "market forces" would generate mass movements of students from school to school each year and during the years according to actual (or rumoured) dissatisfaction with the curriculum options and/or teaching performance. This possibility could be guarded against by means of regulations which limit the rezoning that can occur, such as the approach taken in South Australia. But even such a policy of limited rezoning will have some disadvantages. Students will need to travel further in order to exercise the choice offered, and the costs of this travel will have to be borne by the government or the families involved.

Option 4 *Bus senior students where desired curriculum options are not available.*

Another option for rearranging the location of student groupings is to bus senior students (years 11 and 12) to a neighbouring school for some desired curriculum options which are not offered at their current school. This would ensure a satisfactory range of options is maintained. But bussing involves a number of significant disadvantages, namely the financial cost of providing a bussing service, the study time lost by students involved in travel, the prospect of accidents during travel, and the possible disharmony through mixing different groups of students.

B3.2 Options for Determining Staff Establishments

The three problems of declining enrolments identified above could all be solved by the availability of the appropriate number and type of teachers. Without a scarcity of teachers, there would be no difficulty in

providing an adequate curriculum and in utilizing surplus classroom space. There would be no need to close small schools or to transfer surplus teachers from their current schools. But the availability of teachers is insufficient to satisfy all the desired activities for which they could be employed, and this will always be the case. Some mechanism, therefore, has to be devised by an education system to determine each school's total staff and its composition. In the case study above, a standard enrolment-based formula was applied. Three alternative mechanisms are outlined below.

Option 5 *Modification of staffing formulae.*

Instead of applying a standard formula across the board, the enrolment-based formula may be modified for schools experiencing sustained declining enrolments. For example, the enrolment figure used may be last year's or the average of the past three years or some other variation from the current enrolment figure. But this option would only defer the problem, although it would eliminate sudden and unexpected staff reductions.

Option 6 *Base staffing on curriculum rather than enrolments.*

By basing staffing on the curriculum rather than on enrolment levels, it would be possible to solve the problem of ensuring an adequate range of curriculum offerings. However, there are two major difficulties to be overcome - one is the difficulty of reaching a consensus on the appropriate curriculum upon which to base staffing, and the other difficulty is the additional cost associated with falling pupil-teacher ratios in schools experiencing declining enrolments. Nevertheless, it might be possible to apply such a mechanism partially, say to the senior levels of schooling (which had the curriculum problems in the case study above).

Option 7 *Staff according to a consultative/negotiation model.*

Rather than base staff levels on a single factor, whether enrolment level or desired curriculum, another option is to determine staffing according to a range of factors considered to be pertinent to the unique circumstances of the school. It, therefore, may be possible to institute a mechanism whereby a regional body consults with each school in its region concerning the

factors relevant to staffing and then determines a negotiable staff allocation. Consultation and negotiation continue until the staff allocation is finally determined. Such a system would have the advantage of greater local involvement. On the other hand, there is the possibility that pupil-teacher ratios could eventually vary by substantial margins in the future. But, a "tolerable band" policy could keep this possibility within acceptable margins. Further, there would still be the problem of the allocation of staff to regions, although this process could operate according to a consultative/negotiation model as well.

B3.3 Options for Reducing Staff to a Lower Establishment

Some options for reducing the teaching staff of a school, once the establishment has been determined, are presented here. Their titles are Briault and Smith's, being the three approaches they identified in England.

Option 8 "Wait and hope".

In reducing the number of staff at a school to a lower number, one option is to avoid appointing any new staff to the school until the total number falls to the target. Such a "wait and hope" policy may take many years and the passive teacher losses through resignations and retirements may reduce the range of curriculum offerings possible. Further, there is the question of how to employ those teachers in excess of the target number.

Option 9 "Plan and persuade".

A further obvious alternative is to "stimulate" losses and make those new appointments necessary to effect the reduced school size. But, what happens when all efforts of persuading some staff to transfer do not succeed?

Option 10 "Plan, redeploy and appoint".

Rather than hoping teachers will wish to transfer or attempting to persuade certain teachers to transfer, teachers can be nominated for redeployment either through volunteering or through being designated for such. In this case, the teaching staff is shaped to fit the planned curriculum. The obvious problems with this method will concern teacher unrest and how to plan the curriculum.

B3.4 Options Concerning Surplus Classroom Space

Option 11 *Spread out current activities.*

If available classroom space is insufficient to avoid overcrowding, then a sustained decline in enrolments will relieve such overcrowding. Some advantages of such a development have already been mentioned in section B2.4.

Option 12 *Transfer moveable classrooms to another site.*

If there are transportable classrooms at a school finding surplus classroom space developing, then an obvious solution would be to move the transportable classrooms to another school where classroom space is in short supply. Difficulties to arise in this case concern the determination of when surplus classroom space exists.

Option 13 *Lock-up sections of the school.*

Where classrooms are surplus to current requirements and they cannot be transported to another site, they could be "locked-up" so that they are not used at all. Cost savings are expected to flow from such a policy because of reduced cleaning costs, reduced requirement for electricity, etc.

Option 14 *Lease.*

Surplus classroom space could be leased to other educational bodies (such as other schools, colleges of advanced education, or non-government schools) or to government and private agencies for community services such as health clinics, family counselling services, employment centres, day-care centres, and recreation facilities. To some extent, leasing exists in the ACT but the market appears to be limited.

B4. Conclusion and Implications

The major conclusion is that there are significant problems of sustained decline in school enrolments. These problems are mainly problems of staffing to ensure all students receive an adequate curriculum. Further, where there is a sizable proportion of schools experiencing declining enrolments, some well-developed system policies are required. It is apparent that a single policy response, such as the restructuring in Option 1, will not be sufficient and that a set of policies, consistent with each other, and covering staff, facilities, finance, etc., will need to be developed.

A number of implications can be drawn.

- (a) The planning of policy should involve attempts to consider an integration of the various factors (enrolments, staff, facilities, finance, curriculum), the input of information of all parties concerned, and the pursuit of agreement among the parties involved to ensure success in implementation.
- (b) Those systems with standard enrolment-based staffing will need to modify their formulas to accommodate schools experiencing sustained decline.
- (c) Since the issue is declining enrolments at the local level, it is essential for planning of policy responses that the school communities contribute to the estimation of their future enrolment levels. It would be folly to base policy planning for a system solely on the enrolment estimates of centrally-located experts using the latest statistical techniques.

APPENDIX C
AUSTRALIAN EDUCATION COUNCIL RESEARCH BRIEF

1.00 TITLE: The Changing Patterns of School Enrolment and their Implications for Education Policy and Management

2.00 CLIENT: The Australian Education Council

3.00 STATUS OF BRIEF:

The Brief for the identified research will be in its final form when signed by Professor M.G. Porter, Centre of Policy Studies, Monash University and by the Chairmen of AEC. This will be the agreement between the two parties. More elaborate proposals regarding Sections 4 to 6 of this brief are attached as Appendix I.

4.00 OBJECTIVES:

- 4.1 General:
- (i) to summarise and analyse issues associated with changing patterns of school enrolment;
 - (ii) to identify educational policy and management implications; and
 - (iii) to prepare a series of reports.

- 4.2 Specific:
- (i) to analyse and report on the material submitted to the Council by the Government Education Authorities of the States and Territories in response to a format of required data and statements distributed by Council on 13 December 1979.
 - (ii) to identify and report on the nature and the extent of additional data required to consider the Education Policy and Management Implications of Changing Patterns of School Enrolment and, as far as possible, to provide such data;
 - (iii) to provide for consideration, a comprehensive range of educational policy options at system and school levels consistent with changing school enrolment patterns and possible financial and other related developments to describe the assumptions underlying and the advantages/disadvantages of each option; and
 - (iv) to draw to attention any finding of the study to which the AEC may wish to give further consideration in the light of their possible implications for other education sectors.

5.00 PERSONNEL:

In addition to personnel working for the principal researcher, there is a nominated contact person in each system and authority to assist in such matters as further clarification of data and statements provided through the distributed format (13 December 1979).

6.00 DURATION OF PROJECT:

The final report will be required for the February 1981 meeting of the Australian Education Council. To achieve this the Steering Committee will require a final draft by 12 December 1980 and the AEC Secretariat will require 50 copies of the final report not later than 9 January 1981.

7.00 FUNDS: \$27,000

A detailed budget is included in Appendix I. The proposed schedule of payments will be \$9,000 at the end of September 1980, \$9,000 at the end of October 1980 and \$9,000 on presentation of the final report.

8.00 SUPERVISION:

The Steering Committee, consisting of the AEC Secretary and nominees of the Education Departments in South Australia and Victoria, will be responsible for the direction of the project.

9.00 REPORTING:

Presentation of reports in draft form to the Steering Committee is essential. Unless otherwise agreed, presentation of reports will be as set out in the timetable below.

Release of the report whether in draft or final form by the consultants is not permitted except as may subsequently be determined by the Australian Education Council. In addition, the consultants may only publish separately (and at a later date) aspects of the work that are of scholarly importance, after appropriate consultation with the Steering Committee and the ultimate approval of the AEC or its designated representative.

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